

APPENDIX

Supreme Court of the United States
OCTOBER TERM, 1976

No. 76-930

DIXY LEE RAY, *et al.*,

Appellants,

—V.—

ATLANTIC RICHFIELD COMPANY, *et al.*,

Appellees.

ON APPEAL FROM THE UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF WASHINGTON
(THREE JUDGE COURT)

JAN 5 1977

FILED [REDACTED]

PROBABLE JURISDICTION NOTED FEBRUARY 28, 1977

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Docket Entries

DOCKET ENTRIES

UNITED STATES DISTRICT COURT WESTERN DISTRICT OF WASHINGTON THREE-JUDGE COURT

PLAINTIFFS	ENVIRONMENTAL DEFENSE FUND, INC., <i>Intervenor Defendants</i>
ATLANTIC RICHFIELD COMPANY	
SEATRAN LINES, INC., <i>Intervenor Plaintiff</i>	
YOUNG LAWYERS SECTION, KING CO. BAR ASSOCIATION, <i>Amicus Curiae Plaintiff</i>	KING CO. PROSECUTOR, <i>Intervenor Defendant</i>
UNITED STATES, <i>Amicus Curiae Plaintiff</i>	STATE OF MARYLAND, <i>Amicus Curiae</i>

CAUSE

Declaratory and Injunctive Relief against Enforcement of Washington Tanker Law, Seeks 3 Judge Court to declare State law unconstitutional.

ATTORNEYS

EVANS, DANIEL J., Governor of the State of Washington; SLADE GORTON, Attorney General of the State of Washington; WILLIAM C. JACOBS, Chairman, and HARRY A. GREENWOOD, BENJAMIN W. JOYCE, PHILIP H. LUTHER and J. Q. PAUL, Members, Board of Pilotage Commissioners; and DAVID S. McEACHRAN, Whatcom County Prosecutor
and
COALITION AGAINST OIL POLLUTION, NATIONAL WILDLIFE FEDERATION, SIERRA CLUB, and ENVIR-

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and
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(Judges Goodwin-McGovern-East)

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King Co. Prosecutor

JOHN KEEGAN

ELDON V. C. GREENBERG,

RICHARD A. FRANK

Center for Law & Social
Policy

1751 N Street N.W.

Washington, D.C. 20036

344-3939

PROCEEDINGS

DATE	NR.	PROCEEDINGS
Sept. 8	1	Filed complaint and issued summons.
Sept. 8	2	Filed Notice of Requirement of Three-Judge Court.
Sept. 11		Transferred to Judge McGovern as Judge Sharp has disqualified himself. Notified counsel.
Sept. 10		Ent. order transferring to Judge Goodwin for reassignment.
Sept. 11	3	Filed return on s/c (7)
Sept. 12	4	Transferred to Judge McGovern. Filed order.
Sept. 15	5	Filed certificate as to Three Judge Court.
Sept. 18	6	Filed designation of Circuit Judge Alfred T. Goodwin, Senior Judge William G. East, and District Judge Walter T. McGovern, to hold a three judge court.
Sept. 19		Notified counsel.
Sept. 18	7	Filed return on s/c.
Oct. 8		Ent. order setting chambers conference for 2:00 p.m. on 10/9/75.
Oct. 9		Ent. record of conference.
Oct. 14	8	Filed notice of appearance of Wm. A. Gardiner for David S. McEachran, Whatcom County Prosecutor.
Oct. 14	9	Filed notice of appearance of Charles B. Roe, Jr. for Dan Evans.
Oct. 16	10	Filed notice of appearance of Whatcom County.
Oct. 16	11	Filed letter setting schedule of case including setting 2/23/76 for oral argument and submission of case to three judge court.

DATE	NR.	PROCEEDINGS
Nov. 3		Ent. order setting hearing of this cause for 9:30 a.m. on 2/23/76.
Nov. 17	12	Filed motion to intervene.
Nov. 17	13	Filed affidavit of Rbt. Lynette.
Nov. 17	14	Filed affidavit of Thomas Kimball.
Nov. 17	15	Filed affidavit of Wm. Butler.
Nov. 17	16	Filed affidavit of Brock Evans.
Nov. 17	17	Filed memorandum of points and authorities in support of motion of coalition against oil pollution, The Natl. Wildlife Federation, Sierra Club, and Environmental Defense Fund, Inc. to intervene as defts.
Nov. 17	18	Filed notice of motion, 11/28/75 at 9:30 a.m.
Nov. 17	19	Filed certificate of service.
Nov. 17		Lodged order granting leave to file motion to intervene without a pleading.
Nov. 28		Ent. order continuing motion of Coalition Against Oil Pollution, etc., to intervene to 12/5/75.
Dec. 1	20	Filed memorandum of points and authorities in opposition to motion to intervene.
Dec. 3	21	Filed affidavit of Thomas H. S. Bruker.
Dec. 3	22	Filed reply memorandum in support of motion of Coalition Against Oil Pollution, Natl. Wildlife Federation, Sierra Club, and environmental defense Fund, Inc. to intervene as defts.
Dec. 3	23	Filed certificate of service.
Dec. 5	24	Filed response of defts. Daniel J. Evans, Slade Gorton, Wm. C. Jacobs, Harry Greenwood, Ben. Joyce, Philip Luther, J. Q. Paull, to motion to intervene by Coalition Against Oil

DATE	NR.	PROCEEDINGS
		Pollution, Natl. Wildlife Federation, Sierra Club, and Environmental Defense Fund, Inc.
Dec. 5		Motions to intervene submitted without argument.
Dec. 8	25	Filed response of deft. Whatcom Co. Prosecutor, no objection to motion to intervene.
1975		
Dec. 10	26	Ent. order granting motion to intervene by Coalition Against Oil Pollution, Natl. Wildlife Federation, Sierra Club and Environmental Defense Fund, Inc., per letter of counsel of record this date.
1976		
Jan. 6	27	Filed motion to intervene, Seatrain Lines, Inc.
Jan. 6	28	Filed memorandum of points and authorities in support of motion of Seatrain Lines, Inc. to intervene as a pltf.
Jan. 6	29	Filed notice of intent to file pleading within five calendar days.
Jan. 6	30	Filed affidavit of Howard M. Pack.
Jan. 6	31	Filed notice of motion, 1/16/76 at 9:30 a.m.
Jan. 6	32	Filed certificate of service.
Jan. 7	33	Filed letter from Thomas Brucker.
Jan. 12		Lodged proposed complaint for declaratory and injunctive relief against enforcement.
Jan. 16	34	Filed statement re Seatrain Lines, Inc. motion to intervene.

DATE	NR.	PROCEEDINGS
Jan. 16		Ent. order taking motion of Seatrain Lines to intervene under advisement.
Jan. 19	35	Filed response of intervenors to motion of Seatrain Lines, Inc. to intervene as a party-pltf.
Jan. 20	36	Filed memorandums of points and authorities in opposition to motion of Seatrain Lines, Inc., to intervene as a pltf.
Jan. 22	37	Filed certificate of service of memo. of points, etc.
Jan. 22	38	Filed reply memorandum of points and authorities in support of motion of Seatrain Lines, Inc. to intervene as a pltf.
Jan. 27	39	Filed certificate of service of acceptance of Roe's schedule.
Jan. 28		Ent. record of chambers conference. The court denies the application and motion of Seatrain Lines to intervene pursuant to FRCP 24(a)(2) as a matter of right. Seatrain Lines motion for permissive intervention is granted.
Jan. 28	40	Filed notice of withdrawal and substitution of attorneys for Seatrain Lines, Inc., Lane, Powell, Moss substituted.
Feb. 2	41	Filed proposed complaint for declaratory and injunctive relief against enforcement of Washington Tug Escort Act.
Feb. 6	42	Filed complaint for declaratory and injunctive relief against enforcement of Washington Tug Escort Act.
Feb. 6	43	Filed certificate of service of above complaint.

DATE	NR.	PROCEEDINGS
Feb. 13		Ent. order setting hearing for 9:30 a.m. on 6/25/76.
Feb. 17	44	Filed acknowledgement of service.
Feb. 20	45	Filed acknowledgement of service.
Feb. 20	46	Filed acknowledgement of service.
Mar. 2	47	Filed acknowledgement of service.
Mar. 1		Ent. order granting permission to appear amicus curiae of Young Lawyers Section, King Co. Bar Assoc. and to file an amicus brief. Croil Anderson appearing for the Assoc.
Mar. 31.	48	Filed Motion to intervene as a defendant, King Co. Prosecuting Atty. Lodged Order granting intervention.
Apr. 6	49	Lodged Pretrial Order with exhibits.
Apr. 6	50	Filed Statement of plaintiff and intervening plaintiff regarding King County prosecuting attorney's motion to intervene.
Apr. 7		Ent. order granting the motion of the King Co. Prosecutor to intervene as a defendant in this action upon condition that Prosecutor agree to PTO submitted to Court 4/6/76 and to be bound by time table for presenting briefs as presently established; that prosecutor not seek additional time for oral argument over the time allocated to defendant McEachran, Whatcom Co. Prosecuting attorney. All counsel and Judges notified.
Apr. 13	51	Filed Statement of King County Prosecuting Attorney accepting conditions of intervention.

DATE	NR.	PROCEEDINGS
Apr. 23		Ent. order denying motion of American Institute of Merchant Shipping Co. to appear Amicus Curiae. Counsel advised.
Apr. 30	52	Filed Plaintiff's Trial Brief.
Apr. 30	53	Filed Intervening Plaintiff's Brief in support of complaint for declaratory and injunctive relief.
May 3	*	
May 6	54	Filed Notice of motion of the United States of America to intervene as amicus curiae for 5/14/76.
May 6	55	Filed Motion of the United States of America to intervene as Amicus Curiae.
May 6	56	Filed Certificate of service of motion.
May 6		Lodged Order granting motion of the US of A to intervene as Amicus Curiae.
May 11	57	Filed Response in opposition to the motion of the United States to file brief Amicus Curiae.
May 12	58	Filed Motion to strike portions of brief of intervening plaintiff Seatrain Lines, Inc.
May 12	59	Filed Notice of motion of environmental intervenors to strike portion of brief of Seatrain Lines, Inc. for 5/21/76.
May 12	60	Filed Certificate of service.
May 12	61	Filed Response of environmental intervenors in opposition to motion of United States to intervene as Amicus Curiae.

DATE	NR.	PROCEEDINGS
May 12	62	Filed Response in support of the motion of the United States to file brief Amicus Curiae.
May 13	**	
May 14	63	Filed Response of the United States to opposition to its motion to intervene as Amicus Curiae.
May 14		Lodged Order granting motion of the U.S.A. to intervene as Amicus Curiae.
May 14		Ent. order granting U.S. motion to intervene amicus curiae. Counsel notified. Amicus brief due on or before 5/24/76.
May 17	64	Filed Order granting motion of the United States of America to intervene as amicus curiae.
May 18	65	Filed Response of intervening plaintiff Seatrain Lines, Inc. to intervening defendants' motion to strike.
May 21		Ent. order denying environmental intervenors' motion to strike portions of brief of Seatrain Lines, Inc. Counsel advised.
May 24		Ent. order granting state of Maryland leave to file an amicus brief due no later than 6/4/76. Counsel notified.
May 24	66	Filed letter from State of Maryland re filing of amicus brief.
May 26	67	Filed Brief of the United States as Amicus Curiae.
June 1	68	Filed Brief of Amici Curiae of State of Maryland and Maine.
June 7	69	Filed Application for leave to file brief amicus curiae by the State of

DATE	NR.	PROCEEDINGS
		California (joined by the states of Missouri, Pennsylvania and Wisconsin) in support of defendants Daniel J. Evans, et al.
June 7		Lodged Brief of the California Attorney General Amicus Curiae (joined by the States of Missouri, Pennsylvania and Wisconsin) in support of defendants Daniel J. Evans, et al.
	70	Filed Environmental intervenors' Trial Brief.
	71	Filed Brief of State of Washington defendants, Daniel J. Evans, et al.
	72	Filed Memorandum of points and authorities in support of motion to dismiss of defendants Daniel J. Evans, et al, and State of Washington.
June 8	73	Filed Trial Brief of Intervening defendant, King County Prosecuting Attorney
*5/3	53a	Filed Application of the Maritime Law Assoc. of the U.S. to file Amicus Curiae brief.
**5/13		Ent. order authorizing the Maritime Law Assoc. of the U.S. to file Amicus Curiae brief.
	62a	Filed Brief on behalf of the Maritime Law Assoc. of the U.S., Amicus Curiae
6/10	74	Filed Statement of David S. McEachran, Prosecuting Attorney for Whatcom County, supporting Brief of Christopher T. Bayley, King County Prosecutor, Intervening defendant.

DATE	NR.	PROCEEDINGS
6/14	75	Filed Supplemental Memorandum of Environmental Intervenors
6/16	76	Filed Application of State of New York to file Amicus Curiae Brief. Ent. order denying application of the State of New York to be deemed a party Amicus Curiae on the State of Maryland's memorandum of law as being untimely. Counsel notified.
June 17	77	Filed Motion to supplement the Pretrial Order
	78	Filed Notice of motion to supplement the pretrial order for 6/25/76
June 18	79	Filed Reply Brief of Plaintiff Atlantic Richfield Co.
	80	Filed letter with documents (two) published subsequent to filing Pretrial Order
	81	Filed Reply Brief of intervening plaintiff Seatrain Lines, Inc.
	82	Filed Memorandum of Points and authorities of plaintiff Atlantic Richfield Company in opposition to "Motion to dismiss of defendants Daniel J. Evans, et al., and State of Washington"
June 21	83	Filed Affidavit setting forth facts concerning notice of motion to supplement the pretrial order with attachments Ent. order granting State of California (joined by States of Missouri, Pennsylvania and Wisconsin) to file amicus brief. Counsel advised.
	84	Filed Brief of the California Attorney General as amicus curiae (joined by the

DATE	NR.	PROCEEDINGS
		States of Missouri, Pennsylvania and Wisconsin) in support of defendants Daniel J. Evans, et al.
June 22	85	Filed Plaintiff's consent to defendants' motion to supplement the pretrial order
	86	Filed Certificate of Service.
June 23	87	Filed Affidavit of delivery letter from Mr. Sherwood, Memo of Points and Authorities, and Reply Brief of ARCO to Charles Roe
	88	Filed Affidavit of delivery of above-mentioned documents to Christopher Bayley
	89	Filed Affidavit of Delivery of above-mentioned documents to Ray Haman
	90	Filed Affidavit of delivery of above-mentioned documents to Tom Brucker
June 24	91	Filed Motion of United States as Amicus Curiae intervenor for leave to file reply brief and affidavit
	92	Filed Notice of motion of United States as Amicus Curiae intervenor for leave to file reply brief and affidavit for 6/25/76
		Lodged Order granting motion
		Lodged Reply Brief of the United States as Amicus Curiae
	93	Filed Seatrain's Response to defendants' motion to supplement Pretrial Order
June 25	94	Filed Reply Brief of the United States as Amicus Curiae
	95	Filed Motion to supplement Pre-Trial order

DATE	NR.	PROCEEDINGS
	96	Filed Pretrial Order
June 25		Def. State of Washington's motion to amend PTO granted. Deft. Evans' motion to dismiss denied. Pltf. arco's motion to supplement pretrial order granted.
		Ent. hearing on merits. Argument heard. Case taken under advisement.
July 2	97	Filed Motion of Young Lawyers Section to Withdraw as Amicus Curiae and Order. Counsel notified.
July 13	98	Filed Supplemental Brief of Plaintiff Atlantic Richfield Company on Injunctive relief
July 14	99	Filed Affidavit of Mailing.
July 15	100	Filed Affidavit of delivery of arco brief on The Prosecuting Attorney, Tom Brucker, Lee Johnson, Raymond W. Haman
Aug. 6	101	Filed brief of defendants and intervening defendants on injunctive relief
Aug. 9	102	Filed transcript of proceedings
Aug. 17	103	Filed Reply Brief of Plaintiff Atlantic Richfield Company on injunctive relief
Aug. 18	104	Filed Certificate of Service
Sept. 24	105	Filed and entered Opinion. Copy to counsel by Court.
	106	Filed and entered Order declaring the Washington State Tank Law as null and void. No party shall recover costs. Copy to counsel by Court.
	107	Filed and entered Judgment. Copy to counsel.
Sept. 29	108	Filed Motion of Plaintiff Atlantic Richfield Company for Permanent

DATE	NR.	PROCEEDINGS
		Injunction in Support of Declaratory Judgment
	109	Filed Notice of Motion of Plaintiff Atlantic Richfield Company for Permanent Injunction in Support of Declaratory Judgment; Affidavit of Byron E. Milner and Richard E. Sherwood; and Memorandum of Points and Authorities in Support Thereof
	110	Filed Affidavit of Richard E. Sherwood in Support of Plaintiff Atlantic Richfield Company's Motion for Permanent Injunction in Support of Declaratory Judgment
	111	Filed Affidavit of Byron E. Milner in Support of Plaintiff Atlantic Richfield Company's Motion for Permanent Injunction in Support of Declaratory Judgment
	112	Filed Memorandum of Points and Authorities in Support of Plaintiff Atlantic Richfield Company's Motion for Permanent Injunction in Support of Declaratory Judgment
	113	Filed Motion for Order Shortening Time to give Notice Lodged Order Shortening Time to Give Notice Lodged Order of Permanent Injunction
Sept. 30	114	Filed Response of Environmental Intervenors in Opposition to Plaintiff's Motion for Shortening of time for hearing
	115	Filed Reponse of Governor Daniel J. Evans and Other State defendants in

DATE	NR.	PROCEEDINGS
		Opposition to Atlantic Richfield Company's Motion for Shortening Time to Give notice
	116	Filed Response of Defendant Bayley in Opposition to Plaintiff's Motion to Shorten Time.
	117	Filed Defendant Bayley's Motion Requesting Hearing of ARCO's Motion for Permanent Injunction
	118	Filed Notice of defendant Bayley's Motion Requesting Hearing for October 8 or October 15
	119	Filed Certificate of Service
Oct. 5	120	Filed Affidavit of Service
Oct. 7	121	Filed Defendant Prosecutor Bayley's Memorandum in Opposition to arco's Motion for Permanent Injunction and in Support of Defendants' Motion for Stay.
	122	Filed defs.'s Motion to Stay Enforcement of Judgment and Any Injunctive Relief Ordered by the Court
	123	Filed Memorandum of Governor Daniel J. Evans and Other State defendants in Opposition to Motion for Permanent Injunction and in Support of Stay of Judgment of Court Pending Appeal
	124	Filed Notice of Motion to Stay Enforcement of Judgment and any Injunctive Relief Ordered by the Court for 10/15/76 Lodged Order Denying Plaintiff's Motion for Permanent Injunction Lodged Order Granting Plaintiff's Motion for Permanent Injunction and

DATE	NR.	PROCEEDINGS
		Staying Effective Date of Order of Permanent Injunction
		Lodged Order Granting Permanent Injunction and Denying a Stay
	125	Filed Certificate of Service
Oct. 8	126	Filed Response of Environmental Intervenors to Plaintiff's Motion for Permanent Injunction in Support of Declaratory judgment.
Oct. 15		Def.'s motion to stay enforcement continued subject to call.
Oct. 21	127	Filed def. State of Wash.'s <i>Notice of Appeal</i>
	128	<i>Filed cost bond in amount of \$300 thru Fireman's Fund for appeal</i>
Oct. 26	129	<i>Filed Reply Memorandum of Plaintiff Atlantic Richfield Company in Support of its motion for injunctive relief and in opposition to Defendants' motion to stay enforcement of judgment.</i>
		<i>Ent. order setting hearing on Plaintiffs' Motion for permanent injunction in support of declaratory judgment for 11/12/76 at 9:30 A.M. Counsel advised by letter.</i>
Nov. 1		<i>Mailed certified copies of Notice of Appeal and docket entries to Circuit Court of Appeals.</i>
Nov. 12		<i>Filed Affidavit of Herbert H. Zachow in Support of plaintiff Atlantic Richfield Company's Motion for permanent injunction.</i>
1976		<i>Ent. record of hearing on Prelim. Inj. and motion for stay.</i>
Nov. 12	130	<i>in Support of Declaratory Judgment.</i>

DATE	NR.	PROCEEDINGS
	131	<i>Filed and entered Order of Permanent Injunction. Order is stayed until the 15th day of December 1976. Copy to all counsel.</i>
Nov. 19	132	<i>Filed Notice of Appeal (by State of Wa.) to the Supreme Court of the United States.</i>
Nov. 22	133	<i>Filed Notice of Appeal to the Supreme Court of the United States by Intervenor defendants. Copy to</i>
Nov. 22	134	<i>Filed Notice of Appeal to the Supreme Court of the United States by Prosecuting Attorney</i>
Nov. 23	135	<i>Filed Notice of Appeal to the United States Court of Appeals for the Ninth Circuit by State of Wash.</i>
	136	<i>Filed def. State of Wash.'s Motion for Order Suspending Processing of Appeals to the United States Court of Appeals for the Ninth Circuit</i>
		<i>Lodged Order Suspending Processing of Appeals to the United States Court of Appeals for the Ninth Circuit</i>
	137	<i>Filed Certificate of Service.</i>
Dec. 1	138	<i>Filed Order Suspending Processing of Appeals to the United States Court of Appeals for the Ninth Circuit. Copy to counsel.</i>
Dec. 14	139	<i>Filed Certified copy of Order from Supreme Court continuing stay of order of permanent injunction until further order of that Court.</i>
	140	<i>Filed Opinion on Application of Stay, from Circuit Justice of Supreme Court</i>
Dec. 20	141	<i>Filed Request for Certification of Record</i>

DATE	N.R.	PROCEEDINGS
1977		
Jan. 13	142	Filed copy of letter from Supreme Court granting stay of order of permanent injunction.
Jan. 12		Mailed record on appeal to Supreme Court.
Mar. 7	143	Filed certified copy of Statement of jurisdiction from Supreme Court.

COMPLAINT FOR
DECLARATORY AND
INJUNCTIVE RELIEF
AGAINST ENFORCEMENT
OF WASHINGTON
TANKER LAW
(Three Judge Court)

CIVIL ACTION
No. C 75-648

(Names, addresses, and telephone numbers of attorneys
omitted in printing.)

UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF WASHINGTON

ATLANTIC RICHFIELD COMPANY,
Plaintiff,

v.

DANIEL J. EVANS, Governor of the
State of Washington; SLADE
GORTON, Attorney General of the
State of Washington; WILLIAM C.
JACOBS, Chairman, and HARRY A.
GREENWOOD, BENJAMIN W.
JOYCE, PHILIP H. LUTHER and
J. Q. PAULL, Members, Board of
Pilotage Commissioners; and DAVID
S. McEACHRAN, Whatcom County
Prosecutor,

Defendants.

Plaintiff for its complaint herein alleges as follows:

Nature of the Case

1. This is an action to declare unconstitutional and void and
to enjoin the enforcement of Chapter 125, 1975 Laws of the State

of Washington, enacted as Substitute House Bill No. 527, 44th Legislature, 1st Extraordinary Session (hereinafter "the Tanker Law"). The Tanker Law prohibits oil tankers of a certain size from entering Puget Sound and imposes certain design, equipment, pilotage and tugboat requirements on other oil tankers entering Puget Sound. The Tanker Law is unconstitutional on the following grounds:

(a) It invades a field of regulation which has been preempted by the federal government, and is thus invalid under the Supremacy Clause of the United States Constitution (Article VI, Clause 2);

(b) It conflicts with federal statutes and regulations and is thus invalid under the Supremacy Clause;

(c) It imposes undue burdens upon interstate and foreign commerce, and thereby conflicts with federal power under the Commerce Clause of the United States Constitution (Article I, Section 8, Clause 3) to regulate such commerce.

(d) It invades a field of regulation in which the federal government has recognized the primacy of international agreement and cooperation, and thereby conflicts with federal power to regulate foreign affairs, to regulate foreign commerce (Article I, Section 8, Clause 3), and to make treaties (Article II, Section 2, Clause 2).

(e) It conflicts with international agreements to which the United States is a party, and is therefore invalid under the Supremacy Clause;

Jurisdiction and Venue

2. The jurisdiction of this Court is invoked under 28 U.S.C. §§ 1331(a) and 1337. The matter in controversy exceeds \$10,000, exclusive of interest and costs. This action presents an actual case or controversy appropriate for declaratory relief pursuant to 28 U.S.C. § 2201.

3. This action seeks injunctive relief against the enforcement of the State statute on the ground that it is unconstitutional, and therefore it must be heard and determined by a three-judge court pursuant to 28 U.S.C. § 2281.

4. The venue of this action is in this Court pursuant to 28 U.S.C. § 1391(b).

Parties

5. Plaintiff Atlantic Richfield Company is a Pennsylvania corporation with its principal place of business at Los Angeles, California. Atlantic Richfield is an integrated petroleum company, active in all phases of exploration, development, production, transportation, refining and marketing of petroleum and petroleum products. Atlantic Richfield owns and operates a refinery on Puget Sound, at Cherry Point, near Ferndale, Washington, which is primarily supplied by oil tankers subject to the challenged Tanker Law.

6. Defendant Daniel J. Evans is Governor of the State of Washington, and, as the State's chief executive, is charged with overall responsibility for enforcement of the state's laws, including the Tanker Law challenged herein. Defendant Slade Gorton is Attorney General of the State of Washington, and in such capacity is responsible for enforcing the State's laws, including the Tanker Law challenged herein. Defendant William C. Jacobs is Chairman of the Board of Pilotage Commissioners, an administrative body established by Revised Code of Washington (hereinafter R.C.W.) § 88.16.010 which, pursuant to Section 88.16.030, is charged with administration of the Tanker Law. Defendants Harry A. Greenwood, Benjamin W. Joyce, Philip H. Luther, and J. Q. Paull are the other members of the Board of Pilotage Commissioners. Defendant Davis S. McEachran is Prosecutor of Whatcom County, in which Atlantic Richfield's Cherry Point refinery is located, and has jurisdiction to bring criminal prosecution against Atlantic Richfield for violation of the Tanker Law taking place in that county.

The Challenged Statute

7. The Tanker Law was enacted by the State Legislature in May 1975 and signed into law by Governor Evans on May 29, 1975. A copy of the statute is annexed hereto as Appendix I. The statute goes into effect on September 8, 1975; the Board of Pilotage Commissioners, by order dated August 11, 1975, has

declared its intention to begin enforcement of the statute on such date.

8. The Tanker Law imposes substantial restrictions on the operation of oil tankers in Puget Sound, for the stated purpose of protecting Puget Sound and adjacent waters and shorelines from the danger of oil spills. Section 2 of the statute provides that any oil tanker, whether enrolled (i.e., engaged solely in interstate as opposed to foreign commerce) or registered (i.e., entitled to engage in foreign commerce), of 50,000 deadweight tons (DWT) or more, must employ a pilot licensed by the State of Washington while navigating Puget Sound. Section 3(1) of the statute prohibits any oil tanker of more than 125,000 DWT from entering Puget Sound. Section 3(2) prohibits any oil tanker between 40,000 DWT and 125,000 DWT from entering Puget Sound unless it has all of the following: shaft horsepower of at least one horsepower for each 2.5 DWT; twin screws; double bottoms; two radars, one of which must be collision-avoidance radar; and any other navigational systems as may be prescribed by the Board of Pilotage Commissioners. A proviso to Section 3(2), however, waives compliance with that Section if the tanker is under the escort of tugboats with an aggregate horsepower of 5% of its deadweight tonnage.

9. The Tanker Law adds these statutory provisions to the State Pilotage Act, R.C.W. Chapter 88.16. Pursuant to R.C.W. Section 88.16.030, the Board of Pilotage Commissioners is charged with administration of the Tanker Law and is authorized to promulgate rules and regulations thereunder. Pursuant to Section 88.16.150, violation of the Tanker Law is a misdemeanor.

Federal Preemption

10. The Tanker Law is invalid and unconstitutional because it invades a field of regulation which has been preempted by federal law. The United States has undertaken comprehensive regulation of oil tanker design and construction, safety and equipment requirements, navigational controls and vessel movement control systems. The relevant federal statutes and regulations evidence a congressional intention completely to

occupy this field and to establish a uniform system of federal regulation of oil tankers to the exclusion of state authority.

11. Federal occupation of the relevant field is demonstrated by the Ports and Waterways Safety Act of 1972 (hereinafter PWSA), Pub. L. 92-340, 86 Stat. 424 (July 10, 1972). A copy of this statute is annexed hereto as Appendix II. PWSA establishes a comprehensive regulatory scheme for vessel design, equipment and navigational control, and thus embraces both the objective and the regulatory scheme of the Tanker Law. While Titles I and II of PWSA overlap, Title I is primarily concerned with vessel traffic and navigational control, while Title II is primarily concerned with vessel design and equipment.

12. Title I of PWSA, 33 U.S.C. §§ 1221 et seq., gives the Secretary of Transportation authority to promulgate regulations

"to protect the navigable waters and the resources therein from environmental harm resulting from vessel or structural damage, destruction, or loss" (§ 101).

This broad authority specifically includes regulation of vessel traffic in hazardous areas (§ 101[3]) by

- a) limitation of vessel size (§ 101[3][iii]) and
- b) restriction of vessel operation to those having particular characteristics or capabilities necessary for safe operation (§ 101[3][iv]).

13. Title I guarantees that State and local governments have an opportunity to participate in the development of *federal* regulations and standards by providing in Section 104:

"In preparing proposed rules, regulations and standards, the Secretary shall provide an adequate opportunity for consultation and comment to State and local governments, representatives of the marine industry, port and harbor authorities, environmental groups, and other interested parties."

14. In determining the need for and substance of such regulations, Section 102(e) directs the Secretary to consider a wide range of factors including environmental considerations, the need for efficient conduct of maritime commerce and the economic impact of such regulations.

15. Section 102(b) of Title I confirms congressional intent to preempt as to vessels by specifically permitting stricter state regulation "for structures only."

16. Pursuant to 49 C.F.R. § 1.46(o)(4)(1974), the Secretary of Transportation has delegated his rulemaking authority under the PWSA to the Commandant of the Coast Guard. The Coast Guard has promulgated regulations to implement Title I of the PWSA. Such rules delegate authority to the Captain of the Port to determine on a case-by-case basis whether conditions require establishment of vessel size and speed limitations or restriction of vessel operations to vessels having particular operating characteristics and capabilities necessary for safety. 40 Fed. Reg. 6653 (Fed. 13, 1975), 33 C.F.R. Part 160. Additional regulations proposed by an advance notice of proposed rulemaking would direct the Captain of the Port, in exercising such authority, to consider, among other factors, the hull design of the tanker, including the presence or absence of a double bottom and cargo segregation; the tanker's propulsion system, including its horsepower, number of shafts, and other variables which affect controllability and maneuverability; whether tugboats are in attendance; and whether a pilot is aboard. 39 Fed. Reg. 24157 (June 28, 1974). The advance notice of proposed regulations would also require various navigational devices, including two radars, one of which must be equipped with an anti-collision device, on oil tankers over 10,000 gross tons. *Id.* The Coast Guard has promulgated one set of regulations directed specifically to Puget Sound, establishing a vessel traffic control system to reduce the likelihood of an accident. 39 Fed. Reg. 25430 (July 10, 1974), 33 C.F.R. Part 161, Subpart B.

17. Title II of the PWSA amended the Tank Vessel Act, 46 U.S.C. § 391a, for the express purpose of "protecting the marine environment" by establishing comprehensive standards of design,

construction, equipment and operation of oil tankers. Section 3 of the amended statute gives the Secretary of Transportation broad authority to adopt regulations with respect, *inter alia*, to "the design and construction * * * of such vessels, including * * * superstructures, hulls, * * * equipment, appliances, [and] propulsive machinery, * * * and with respect to the operation of such vessels," thereby including all of the subject matter of the Washington Tanker Law.

18. Title II identifies the objectives of the regulations to be adopted by the Secretary of Transportation:

"Such rules and regulations shall, to the extent possible, include but not be limited to standards to improve vessel maneuvering and stopping ability and otherwise reduce the possibility of collision, grounding, or other accident, to reduce cargo loss following collision, grounding, or other accident, and to reduce damage to the marine environment by normal vessel operations such as ballasting and deballasting, cargo handling, and other activities." (Sec. 7)

19. Title II also establishes requirements for inspection of both domestic and foreign tankers (Sec. 5 and 6) and further provides that the Secretary may deny entry to the U. S. waters of tankers in violation of the statute or regulations

20. Pursuant to the authority of Title II, the Coast Guard published proposed comprehensive design and construction regulations applicable to tankers in the coastwise (interstate) trade. 39 Fed. Reg. 24150 (June 28, 1974). In a Final Environmental Impact Statement dated August 15, 1975, the Coast Guard announced that such regulations are to be made final, with minor changes, on or about September 15, 1975. It also announced that substantially similar, if not identical, regulations to implement Title II as to tankers engaged in foreign commerce would be promulgated in the near future. Section 7(C) of PWSA directs that such regulations be promulgated not later than January 1, 1976.

21. The regulations referred to in Paragraph 20 completely cover the field of tanker design, construction and required equipment. They require segregated ballast tanks on new tankers

over 70,000 DWT, which must be distributed between the cargo tanks and the vessel's hull or between cargo wing tanks so as to mitigate the effects of collisions or groundings. They impose restrictions on the size and arrangement of cargo tanks in new tankers, including requirements for segregation of cargo tanks, in order to limit the outflow of oil in case of accident. The regulations provide incentive for the adoption of double bottoms and/or double sides by relaxing restrictions otherwise applicable to cargo tank arrangement and size. The regulations do not require double bottoms, twin screws, or increased horsepower. Imposing such requirements was considered by the Coast Guard and expressly rejected, as explained in the environmental impact statement, in large part because of the importance of avoiding unilateral action by the United States not in conformance with international agreements.

22. In its consideration of the PWSA, Congress recognized that regulation of oil tanker design, construction, equipment and operation was international in scope. Congress was particularly aware of the then impending 1973 International Conference on Marine Pollution held under the auspices of the Inter-Governmental Maritime Consultative Organization (IMCO), an arm of the United Nations. Therefore, in section 7(C) Congress authorized the Secretary to delay implementation of Title II until after this Conference, and to defer to such rules and regulations as might be established by "international treaty, convention, or agreement, which generally address the regulation of similar topics for the protection of the marine environment."

23. Congress' concern for international uniformity in the regulation of tanker design was recognized by the Coast Guard, for its proposed regulations under Title II are consistent with and incorporate the standards enunciated in the International Convention for the Prevention of Pollution from Ships, 1973, adopted by the International Conference on Marine Pollution.

24. Congress has demonstrated in other statutes both its intent to preempt the regulation of the field and its concern for international uniformity.

Conflict With Federal Statutes

25. The Tanker Law is invalid and unconstitutional under the Supremacy Clause because it conflicts with various federal statutes and regulations.

26. Section 2 of the Tanker Law, requiring all tankers over 50,000 DWT, whether enrolled or registered, to employ a pilot licensed by the State, conflicts with federal pilotage laws to the extent that it requires an enrolled vessel to employ a local pilot, and is thus invalid under the Supremacy Clause. 46 U.S.C. § 364 provides, in pertinent part:

"[E]very coastwise seagoing steam vessel [including oil tankers, however propelled, 46 U.S.C. § 391a] subject to the navigation laws of the United States, and to the rules and regulations aforesaid, not sailing under register, shall, when under way, except on the high seas, be under the control and direction of pilots licensed by the Coast Guard."

46 U.S.C. § 215 provides:

"No State or municipal government shall impose upon pilots of steam vessels any obligation to procure a State or other license in addition to that issued by the United States
* * *."

While Section 215 further provides that the statute shall not be construed "to annul or affect any regulation established by the laws of any State, requiring vessels entering or leaving a port in any such State * * * to take a pilot duly licensed or authorized by the laws of such State," this proviso applies only to vessels "other than coastwise steam vessels." The net effect of these statutes, as they have been consistently interpreted for over 100 years, is that a State may require State-licensed pilots on registered vessels, but may not require such pilots on enrolled vessels.

27. Section 3(1) of the Tanker Law, prohibiting any oil tanker over 125,000 DWT, whether enrolled or registered, from entering Puget Sound, conflicts with the federal shipping laws which authorize enrolled and licensed vessels to engage in interstate commerce. 46 U.S.C. § 319 requires that every vessel of twenty tons or more engaged in interstate commerce, other than

registered vessels, be enrolled and licensed. 46 U.S.C. § 251 grants to enrolled and licensed vessels "the privileges of vessels employed in the coasting trade," i.e., the right to engage in interstate commerce. Pursuant to these statutes and the rights granted thereunder, a State may not prohibit a federally enrolled and licensed vessel from entering its navigable waters.

28. Section 3(1) of the Tanker Law also conflicts with the federal shipping laws which authorize registered vessels to engage in interstate and foreign commerce. 46 U.S.C. § 221 grants to registered vessels "the rights and privileges appertaining to * * * vessels of the United States." Pursuant to this statute and the rights granted thereunder, a state may not prohibit a federally registered vessel engaged in the exercise of these rights from entering its navigable waters.

29. The Tanker Law conflicts with the PWSA by imposing requirements beyond those contained in regulations promulgated by the Coast Guard. In promulgating such regulations, the Coast Guard is required to consider a broad range of factors, including the efficient conduct of maritime commerce, the extent of interference with the flow of commercial traffic, the economic impact of such regulations, the extent to which such regulations will contribute to protection of the marine environment, and the practicability of compliance therewith, including cost and feasibility (PWSA §§ 102(e), 201(4)). The Coast Guard's decision not to impose more stringent requirements with respect to tanker design, construction, equipment, and navigational controls than those imposed by the present regulations and those to be promulgated represents a controlling federal determination that further requirements should not be imposed. For example, as noted in Paragraphs 20 and 21 herein, the Coast Guard has expressly rejected requiring double bottoms, twin screws or increased horsepower.

30. The Tanker Law conflicts with the PWSA by prohibiting tankers over 125,000 DWT holding certificates or permits issued pursuant to Sections 5 and 6 of Title II from entering Puget Sound and by imposing on smaller tankers requirements beyond those

necessary to obtain such certificates or permits. Sections 5 and 6 require that all oil tankers be inspected by the Coast Guard; that foreign tankers obtain a certificate of compliance with rules and regulations promulgated for protection of the marine environment; that domestic tankers obtain a certificate of compliance with rules and regulations promulgated for vessel safety and for protection of the marine environment; and that domestic tankers obtain a permit authorizing the carriage of oil. This inspection, certification and permit procedure represents a controlling federal determination that the particular vessel meets all necessary safety and environmental standards and is entitled as a matter of right to engage in the carriage of oil.

Invalidity Under Commerce Clause

31. The Tanker Law impinges upon federal power to regulate interstate and foreign commerce and imposes an undue burden upon such commerce, and is therefore invalid under the Commerce Clause of the United States Constitution (Article I, Section 8, Clause 3).

32. The establishment of standards governing the design, construction, equipment, and operation of oil tankers vitally affects a phase of interstate and foreign commerce in which national uniformity is essential and which therefore demands exclusive federal regulation. If the State of Washington can constitutionally impose such standards, so may each of the other coastal states, and each state is likely to impose differing and inconsistent requirements. Such a patchwork of state regulation would substantially and adversely affect the transportation of crude oil to the United States. Because of the enormous capital expenditures required to construct oil tankers, neither Atlantic Richfield nor any other company can maintain a separate fleet of tankers to serve refineries in each state in which it operates. Economical use of tankers requires the flexibility for each to serve many ports. The Tanker Law, alone or in conjunction with differing requirements of other states, would restrict the ports at which tankers can call and thereby prevent the efficient use of tankers. The threat of proliferation of differing state laws makes planning and construction of new tankers to serve the United

States difficult if not impossible. The cumulative effect of these burdens would substantially increase the cost of crude oil to American refineries and the cost of petroleum products to American consumers.

33. The Tanker Law unduly burdens interstate commerce. For example, Atlantic Richfield's Cherry Point refinery was designed and constructed specifically to refine crude oil from the North Slope of Alaska. Such oil is to be transported by the Trans-Alaska Pipeline, presently under construction, to the Port of Valdez, Alaska, and from there by tanker to the lower 48 states. Section 3(1) will require use of greater numbers of tankers, thus slowing the movement and increasing the cost of such oil to refineries in Washington and increasing the cost of petroleum products to consumers in Washington and other states. The proviso to Section 3(2) will require the use of tugboats to avoid the economic impact of the design and equipment requirements of that Section, and Section 2 will require the use of local pilots, likewise slowing the movement and increasing the cost of Alaskan oil.

34. The Tanker Law unduly burdens the foreign commerce of the United States. For example, it will slow the movement and increase the cost of oil from the Persian Gulf to Cherry Point. It will also exclude from Puget Sound ports a large number of vessels of foreign registry and disrupt trade and other relations with such foreign countries.

35. The Tanker Law adversely affects settled practices of international trade in the oil industry. Tankers over 125,000 DWT are in general use throughout the world, and many more are under construction, including four being constructed for Atlantic Richfield. No smaller tanker currently afloat meets the design and equipment standards of Section 3(2). While this Section permits a smaller tanker to escape those standards by use of tugboats, it does so only at substantial cost. The local pilot requirement of Section 2 adds additional cost.

Invalidity Under Foreign Affairs Power

36. The Tanker Law conflicts with the federal power to make

treaties (Article II, Section 2, Clause 2), to regulate foreign commerce (Article I, Section 8, Clause 3), and to regulate foreign affairs.

37. The conduct of international shipping of oil by tankers is a matter of major world-wide concern. Most of the world's oil is carried from producing countries to consuming countries by tanker, and such tanker operations constitute a substantial percentage of the total international maritime commerce. The international tanker fleet contains ships flying the flags of many different countries. Many tankers of foreign registry, including tankers exceeding 125,000 DWT, have called at Cherry Point or other United States ports, and will be adversely affected, if not excluded, by the Tanker Law or the enactment of similar state laws. Oil tankers are constructed by shipbuilders in a number of foreign nations, shipbuilders will also be adversely affected by the Tanker Law or the enactment of similar state laws. To the extent that regulation of oil tankers affects the availability and cost of oil to consuming nations, such regulation is vitally important to virtually every nation in the world. To the extent that regulation of oil tankers imposes limitations on the use of the world's tanker fleet and affects the shipbuilding industry of many foreign nations, such regulation is of significant concern to the principal maritime trading nations. Because of the international nature of tanker ownership, construction, and trade patterns, the regulation of tanker design, construction and operations by international agreement is desirable, if not essential.

38. Prevention of oil pollution by establishment of standards of tanker construction, design, equipment and operation is also an issue of major international concern. As is more particularly described in paragraphs 43-47 below, several international conferences have been held in recent years and have achieved substantial progress in obtaining international agreement on measures to prevent oil pollution resulting from oil tanker operations. Further conferences to consider additional regulations to prevent such pollution are planned. As these efforts recognize, pollution of the seas by oil tankers is an international problem which requires a coordinated international solution to achieve any significant progress.

39. The federal government has recognized that international agreement and cooperation is essential in this area. The United States has been active in the several international conferences, and has been instrumental in securing the international agreements and cooperation thus far achieved. Congress in its passage of the PWSA recognized the necessity for international solution of the pollution problem and specifically authorized the Coast Guard to defer to the standards established by international agreement. The regulations to be promulgated by the Coast Guard under the PWSA in fact incorporate and are substantially based upon the standards established by international agreement. The Coast Guard rejected additional regulations in large part because of its view that international cooperation in oil pollution control efforts is essential.

40. Unilateral action by the State of Washington to impose standards of tanker construction, design, equipment and operation substantially undercuts the efforts of the federal government to secure international agreement on tanker regulation, and thus infringes the treaty-making and foreign affairs powers of the federal government.

41. Unilateral action by the State of Washington to impose standards of tanker construction, design, equipment and operation substantially and adversely affects the foreign trade and foreign relations of the United States. Such action by the State could cause loss of foreign trade, retaliatory actions by foreign governments against United States shipping, and adverse effects on foreign relations, particularly with major shipping and shipbuilding nations. Such regulation of oil tankers must be prescribed exclusively by the federal government.

Conflict With International Agreements

42. The Tanker Law conflicts with the obligations of the United States under several international agreements and is therefore invalid under the Supremacy Clause.

43. The Safety of Life at Sea Convention of 1960 (SOLAS), to which the United States is a party, requires periodic inspection

by the government of the country in which a ship is registered of its "hull, machinery and equipment * * * in order to insure that their condition is in all respects satisfactory * * * for the service for which the ship is intended." Chapter I, Regulation 10. Regulation 12 provides that the government shall thereafter issue the ship a certificate attesting to the satisfactory condition of the ship for such service. Regulation 17 requires that each nation party to the Convention shall accept the certificate issued by the government of registry for all purposes under the Convention. The Tanker Law, by excluding certificated oil tankers of foreign registry from entering Puget Sound, or penalizing such tankers for not meeting the additional requirements of the Washington law, constitutes a refusal to recognize the certificate of the foreign government that the vessel is fit for the service in which it is engaged, and therefore conflicts with the obligations of the United States under SOLAS.

44. SOLAS contains a number of provisions specifying construction standards, design features, and required navigational equipment applicable to oil tankers, as well as cargo and passenger ships. Among such provisions are Chapter II, Regulation 29, specifying required steering gear; Chapter II, Regulation 54, specifying standards of construction and materials for ships of 4,000 gross tons or more; Chapter II, Regulation 65, requiring certain fire fighting equipment; and Chapter IV, Regulation 3 requiring radiotelegraph equipment on ships of 1,600 gross tons or more. Additional requirements imposed by the Tanker Law in the area of vessel design and construction and required safety and navigation equipment are in derogation of the international scheme to which the United States has subscribed, and are therefore invalid.

45. The Tanker Law also conflicts with the provisions of the International Convention for the Prevention of Pollution of the Sea by Oil, 1954, as amended on October 15, 1971, pursuant to Resolution A.246 of the Seventh IMCO Assembly. Annex C of this Convention, as amended, establishes standards governing cargo tank arrangement and segregation, and imposes limitations upon tank size for new oil tankers, for the purpose of protecting the marine environment. The standards adopted by IMCO were those

advanced by the United States in the IMCO Assembly. The United States has not yet ratified the Convention, but the Oil Pollution Act Amendments of 1973, Pub. L. 93-119, 87 Stat. 424 (October 4, 1973), adopted its standards. 33 U.S.C. § 1004a. This statute will become operative only upon ratification of the Convention by the United States. In the meantime, however, the Coast Guard has published proposed regulations which would put the IMCO standards into effect administratively. The Washington Tanker Law, by imposing additional and differing standards intended to achieve the same purposes, is in conflict with the international scheme in which the United States has played a central part.

46. The Tanker Law also conflicts with the International Convention for the Prevention of Pollution from Ships, adopted in November 1973 by the International Conference on Marine Pollution. This Convention establishes a comprehensive scheme regulating the discharge of oil from tankers and the design and construction of new oil tankers in order to protect the marine environment. In Regulation 13, the Convention requires each new oil tanker of 70,000 DWT or more to have segregated ballast tanks. Chapter III imposes design and construction standards intended to minimize oil pollution from tankers in the event of accident. Regulation 24 adopts the provisions of the International Convention for the Prevention of Pollution of the Sea by Oil respecting limitation of size, and segregation and arrangement of cargo tanks. Regulation 25 establishes standards designed to insure the stability of tankers in the event of accident so as to limit the amount of oil spilled in such event. Regulation 23 specifies the calculations required to determine the precise standards imposed by Regulations 24 and 25, and in such calculations provides for credit if the tanker is fitted with a double bottom. Regulation 4 requires periodic tanker inspection to insure that the standards of the Convention are met, and Regulation 5 provides for issuance of a certificate of compliance to tankers meeting such requirements.

47. The United States actively participated in the proceedings leading to adoption of the Convention. While the Convention has not yet been ratified by the United States, Section

7(C) of Title II of the PWSA authorizes the Coast Guard to defer to standards established by the Convention, and Coast Guard regulations scheduled to become effective September 15 in fact do adopt these standards. The Washington Tanker Law establishing additional and differing standards for the construction, design and operation of oil tankers is in conflict with the international scheme in which the United States has played a substantial part.

Irreparable Injury

48. Enforcement of the Tanker Law by the defendants will cause Atlantic Richfield great and immediate irreparable injury.

49. Tankers over 125,000 DWT have been constructed in recent years and are now in general use throughout the world because they lower the cost of transporting oil in large quantities and are the most economically efficient means of transporting such oil. Tankers over 125,000 DWT have been calling regularly at Atlantic Richfield's Cherry Point refinery. Atlantic Richfield has under construction four tankers over 125,000 DWT, at an aggregate cost in excess of \$200,000,000. Section 3(1) of the Tanker Law, prohibiting all tankers over 125,000 DWT from entering Puget Sound, thereby will deprive Atlantic Richfield of the most efficient use of its existing and planned tanker fleet, including tankers available on the world charter markets, and will adversely affect the cost of serving and operating its Cherry Point refinery.

50. No tanker currently meets the design, construction and equipment requirements of Section 3(2) of the Tanker Law. Modification of existing tankers to comply with these requirements would be prohibitively expensive. As a result, Atlantic Richfield will be compelled to employ unnecessary tugboats to escort each of its tankers to Cherry Point, at considerable continuing cost. If such tugboats are unavailable in sufficient sizes or numbers, Atlantic Richfield will incur further costs as well as delays.

51. Tanker construction requires exceptionally long lead times. The design, construction and equipment requirements of Section 3 of the Tanker Law, coupled with the threat of similar statutes elsewhere, at the same time that the federal government is imposing different standards, create uncertainty and make it impracticable for Atlantic Richfield to plan effectively to meet its future oil transportation needs.

52. The requirement of Section 2 of the Tanker Law that local pilots be employed on all tankers over 50,000 DWT imposes an additional continuing cost on most tankers used by Atlantic Richfield to serve its Cherry Point refinery.

WHEREFORE, plaintiff prays:

1. That the Tanker Law be declared unconstitutional, void and unenforceable;
2. That defendants, their agents, and any person acting on their behalf, at their direction or under their control be permanently enjoined from taking any action to implement or enforce the provisions of the Tanker Law;
3. That pending final determination of this action, defendants, their agents, and any person acting on their behalf, at their direction or under their control be, upon further application by plaintiff, preliminarily enjoined from taking any action to implement or enforce the provisions of the Tanker Law; and
4. That plaintiff recover its costs of suit herein together with such other and further relief as the Court may deem just and proper.

DATED: September 8, 1975

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PRE-TRIAL ORDER

UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF WASHINGTON
AT SEATTLE

No. C 75-648

ATLANTIC RICHFIELD COMPANY,
Plaintiff,

and

SEATRAN LINES, INCORPORATED,
Intervening Plaintiff,

VS.

DANIEL J. EVANS, et al.,
Defendants,

and

COALITION AGAINST OIL
POLLUTION, et al.,
Intervening Defendants.

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PRETRIAL ORDER

**UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF WASHINGTON
THREE JUDGE COURT**

(Names, addresses, and telephone numbers of attorneys omitted
in printing.)

As the result of a pretrial conference between attorneys for plaintiff, defendants and intervenors, the following facts were agreed upon, issues of fact and law framed and exhibits identified:

I. ADMITTED FACTS

1. This is an action seeking to declare unconstitutional and void and to enjoin the enforcement of Chapter 125, 1975 Laws of the State of Washington, enacted as Substitute House Bill No. 527, 44th Legislature, 1st Extraordinary Session (hereinafter H.B. 527).

JURISDICTION AND VENUE

2. The jurisdiction of this Court is invoked under 28 U.S.C. §§ 1331(a) and 1337. The matter in controversy exceeds \$10,000, exclusive of interest and costs. This action presents an actual case or controversy appropriate for declaratory relief pursuant to 28 U.S.C. § 2201. Defendants represented by the Office of the Attorney General contend that the Eleventh Amendment to the United States Constitution precludes this Court's jurisdiction.

3. This action seeks injunctive relief against the enforcement of a State statute on the ground that it is unconstitutional, and therefore it must be heard and determined by a three-judge court pursuant to 28 U.S.C. § 2281.

4. The venue of this action is in this Court pursuant to 28 U.S.C. § 1391(b).

PARTIES

5. Plaintiff Atlantic Richfield Company is a Pennsylvania corporation with its principal place of business in Los Angeles, California. Atlantic Richfield is an integrated petroleum company in domestic and international commerce, active in all phases of exploration, development, production, transportation, refining and marketing of petroleum and petroleum products. Atlantic Richfield owns and operates a refinery at Cherry Point, near Ferndale, Washington, which is primarily supplied by oil tankers subject to challenged H.B. 527.

6. Seatrain Lines, Inc. is a Delaware corporation with its principal place of business in New York. Seatrain Lines, Inc. owns and operates vessels in domestic and international commerce and is a shipbuilder in the United States. Seatrain Shipbuilding Corp., a wholly owned subsidiary of Seatrain Lines, Inc., operates a shipyard in Brooklyn, New York. (Both Seatrain Lines, Inc. and Seatrain Shipbuilding Corp. are hereinafter referred to as "Seatrain".)

7. Defendant Daniel J. Evans is Governor of the State of Washington, and, as the State's chief executive, is charged with seeing that the laws of the State, including H.B. 527, are faithfully executed. Defendant Slade Gorton is Attorney General of the State of Washington, and in such capacity is required to serve as the legal advisor of state officers and to perform such other duties as may be prescribed by law. Among these duties is to institute and prosecute all actions and proceedings for, or for the use of the state, which may be necessary in the execution of the duties of any state officer. Defendant William C. Jacobs is Chairman of the Board of Pilotage Commissioners, an administrative agency of the State of Washington established by Section 88.16.010 of the Revised Code of Washington (hereinafter "R.C.W."), which, pursuant to R.C.W. § 88.16.030, is charged with administration of H.B. 527. Defendants Harry A. Greenwood, Benjamin W. Joyce, Philip H. Luther, and J. Q. Paull are the other members of the Board of Pilotage Commissioners. Defendant David S. McEachran is Prosecuting Attorney of Whatcom County,

in which Atlantic Richfield's Cherry Point refinery is located, and is empowered to prosecute actions involving violations of H.B. 527 occurring in Whatcom County, or occurring onboard a ship passing through the waters of Whatcom County when the place of violation by the vessel cannot be determined.

8. Intervening defendant The Coalition Against Oil Pollution is a non-partisan, non-profit corporation organized and existing under the laws of the State of Washington, established for the stated purposes of preservation of the beauty and natural resources of Puget Sound; development of aquaculture and other marine industries; encouragement of oceanographic research; and creation of stringent laws governing the exploration, transportation, handling and refining of oil in the Puget Sound region. Its principal office is located in Redmond, Washington. Intervening defendant National Wildlife Federation (NWF) is a national, non-profit organization incorporated under the laws of the District of Columbia, with a principal place of business in that city. NWF is a conservation-education organization the stated purpose of which is to foster an awareness of the need to conserve and restore the human environment and the natural resources of the United States. Intervening defendant Environmental Defense Fund, Inc. (EDF) is a non-profit, public benefit membership corporation organized and existing under the laws of the State of New York. Its principal office is located in East Setauket, New York, and it maintains branch offices in Berkeley, California; Denver, Colorado; New York, New York; and Washington, D.C. EDF is an organization made up of scientists and other citizens whose stated goal is effective protection of the human environment and the wise use of natural resources. Intervening defendant The Sierra Club is a non-profit organization, incorporated under the laws of the State of California, with its principal offices in San Francisco, California, an office in Washington, D.C., and an office of international environmental affairs in New York, New York. The Sierra Club is a conservation organization the stated purpose of which has been to enlist public cooperation in the protection of the natural environment and its resources, to provide the public with information relevant to environmental issues, and to stimulate informed public discussion with respect to such issues. Each of these Intervenor has members who reside near Puget

Sound and who use the waters and shoreline of Puget Sound for recreational and other purposes.

THE CHALLENGED STATUTE

9. H.B. 527 was passed by the Washington Legislature in May 1975 and signed into law by Governor Evans on May 29, 1975. A copy of the statute, now codified in R.C.W. ch. 88.16, together with a message of the Governor relating to its approval, is annexed as Exhibit A. The statute went into effect on September 8, 1975; the Board of Pilotage Commissioners began enforcement of the statute on that date.

10. H.B. 527 states, *inter alia*:

"Sec. 2. * * * [A]ny oil tanker, whether enrolled or registered, of fifty thousand deadweight tons¹ or greater, shall be required to take a Washington state licensed pilot while navigating Puget Sound and adjacent waters². * * *

"Sec. 3. * * * (1) Any oil tanker, whether enrolled or registered, of greater than one hundred and twenty-five thousand deadweight tons shall be prohibited from * * * [entering Puget Sound].

"(2) An oil tanker, whether enrolled or registered, of forty to one hundred and twenty-five thousand deadweight tons may * * * [enter Puget Sound] if such tanker possesses all of the following standard safety features:

(a) Shaft horsepower in the ratio of one horsepower to each two and one-half deadweight tons; and

(b) Twin screws; and

¹The term "deadweight tons" is defined by the Board of Pilotage Commissioners for purposes of H.B. 527 as the cargo-carrying capacity of a vessel, including necessary fuel oils, stores, and potable waters, as expressed in long tons (2240 pounds equals one long ton).

²"Puget Sound and adjacent waters" (hereinafter "Puget Sound") is defined in H.B. 527 as those waters east of a line extending from Discovery Island Light south to New Dungeness Light.

(c) Double bottoms, underneath all oil and liquid cargo compartments; and

(d) Two radars in working order and operating, one of which must be collision avoidance radar; and

(e) Such other navigational position location systems as may be prescribed from time to time by the board of pilotage commissioners:

Provided, That, if such forty to one hundred and twenty-five thousand deadweight ton tanker is in ballast or is under escort of a tug or tugs with an aggregate shaft horsepower equivalent to five percent of the deadweight tons of that tanker, subsection (2) of this section shall not apply: Provided further, That additional tug shaft horsepower equivalencies may be required under certain conditions as established by rule and regulation of the Washington utilities and transportation commission pursuant to chapter 34.04 RCW: Provided further, That a tanker of less than forty thousand deadweight tons is not subject to the provisions of this act."

11. The Board of Pilotage Commissioners, on August 11, 1975, issued an order implementing H.B. 527. A true copy of such order is filed herewith as Exhibit B.

12. H.B. 527 has been and will be applied to all oil tankers in excess of 40,000 DWT which enter Puget Sound regardless of the national flag such tankers fly.

13. Atlantic Richfield has been complying with H.B. 527 since it became effective. No Seatrain tanker has entered Puget Sound since the effective date of H.B. 527.

II. FACTS NOT TO BE CONTESTED

The following facts, while not admitted, are not to be contested for purposes of this litigation. Each shall be admissible in evidence, but each party reserves the right to contest the materiality or relevance of such facts.

14. Atlantic Richfield owns and operates a refinery at Cherry Point, near Ferndale, Washington. This refinery is located

adjacent to the Straits of Georgia, east of the line extending from Discovery Island Light south to New Dungeness Light and within the waters regulated by H.B. 527. It has docking facilities on these waters. The Cherry Point refinery has the capacity to process approximately 96,000 barrels³ of crude oil per day.

15. The Cherry Point refinery and associated facilities were built and began operation in 1971 and are presently valued by the Whatcom County assessor at approximately \$154 million. The refinery was designed and built to refine crude oil from the North Slope of Alaska when it becomes available. The refinery is capable of refining and has refined crude oil from other sources. Since 1971 the refinery has received sufficient crude oil to operate at above 85 per cent of capacity each year, and Atlantic Richfield presently plans to continue to operate the refinery at or above that level. Alaskan North Slope oil is now expected to begin to flow in 1977 and Atlantic Richfield presently intends to transport its share of that oil from the southern terminus of the Trans-Alaska Pipeline at Valdez, Alaska to Cherry Point and other West Coast ports by tanker.

16. The following table sets out the approximate amounts and sources of crude oil received by Atlantic Richfield's Cherry Point Refinery since 1972:

Year	Total Crude Receipts (barrels per day)	Canadian Crude Receipts (barrels per day)	Tanker Crude Receipts (barrels per day)	Percentage Received by Tanker
1972	84,800	74,400	10,400	12%
1973	97,000	60,700	36,300	27%
1974	90,800	40,800	50,000	56%
1975	94,200	31,500	62,700	67%

The crude oil received by tanker has originated primarily in the Persian Gulf; the Canadian crude was received primarily through the Canadian Transmountain Pipeline. The Canadian Minister of Energy, Mines and Resources has announced that his government intends to end all oil exports to the United States by the early

³One barrel of crude oil is equal to 42 U.S. gallons. There are approximately 7.2 barrels (or 302 gallons) of crude oil in one long ton. One long ton is equal to 2,240 pounds. One short ton is equal to 2,000 pounds.

1980's. If that occurs, Atlantic Richfield plans to supply by tanker all crude oil to be refined at Cherry Point.

17. Since Atlantic Richfield's Cherry Point refinery commenced operations, its docks have received through 1975, 95 deliveries of crude oil in tankers with deadweight tonnages in excess of 40,000 deadweight tons ("DWT") and not more than 125,000 DWT. The breakdown of the receivings is as follows:

Year	No. of Arrivals
1972	5
1973	21
1974	32
1975	37
	—
	95

In addition, it has received 10 deliveries of crude oil in tankers of 40,000 DWT or less for same period as follows:

Year	No. of Arrivals
1972	8
1973	2
1974	0
1975	0
	—
	10

A list of the tankers by date of arrival, name, size and flag is set forth in Exhibit C.

18. The docking facilities at Atlantic Richfield's Cherry Point refinery are capable of docking, and before the challenged statute did dock, tankers in excess of 125,000 DWT. Fifteen crude oil tankers over this size have called at Cherry Point from the commencement of refinery operations through the date H.B. 527 became effective. The annual breakdown of such dockings is as follows:

Year	No. of Arrivals
1972	3
1973	4
1974	3
1975	5
	—
	15

At least ten of these tankers were fully loaded. (A list of the tankers by date of arrival, name, size and flag is set forth in Exhibit D.) None of the above tankers was a United States flag vessel or owned by Seatrain.

19. There are five other refineries located adjacent to Puget Sound and served by tankers subject to H.B. 527 (the location of these refineries and Atlantic Richfield's refinery is shown on a map of the State of Washington annexed as Exhibit E).

A. Mobil Oil Company's refinery located near Ferndale, Washington, has a processing capacity of 71,500 barrels per day. Crude oil is supplied to it both by tanker and from Canada by pipeline. The largest ship to transfer oil to the Mobil refinery from its dock at Ferndale was 101,000 DWT. The largest fully loaded tanker which has docked at Mobil's dock is 63,000 DWT. The depth at dockside at the Mobil refinery is not greater than 45 feet. Mobil has publicly announced that it has plans under study, although no governmental approval has yet been sought or received, to expand its docking facilities to accommodate fully loaded tankers up to approximately 150,000 DWT.

B. Shell Oil Company's refinery located at Anacortes, Washington has a processing capacity of 91,000 barrels per day. Crude oil is supplied to it both by tanker and from Canada by pipeline. The largest ship to transfer oil to the Shell refinery from its dock at Anacortes was 78,000 DWT. The largest fully loaded tanker which has docked at Shell's dock is 64,500 DWT. The depth at dockside at the Shell refinery is not greater than 45 feet. Shell has publicly announced that it has plans under study, although

no governmental approval has yet been sought or received, to build a new docking facility with greater dockside depth at its Anacortes refinery to accommodate fully loaded tankers up to 200,000 DWT.

C. Texaco, Inc.'s refinery located at Anacortes, Washington has a processing capacity of 78,000 barrels per day. Crude oil is supplied to it both by tankers and from Canada by pipeline. The largest ship to transfer oil to the Texaco refinery from its dock at Anacortes was 98,500 DWT. The largest fully loaded tanker which has docked at Texaco's dock is 78,000 DWT. The depth at dockside at the Texaco refinery is not greater than 45 feet.

D. U.S. Oil & Refining Company's refinery located in Tacoma, Washington has a processing capacity of 18,500 barrels per day. Crude oil is supplied to it only by tanker. The largest ship to transfer oil to the U.S. Oil refinery from its dock at Tacoma was 103,000 DWT. The largest fully loaded tanker which has docked at U.S. Oil's dock is 45,000 DWT. The depth at dockside at the U.S. Oil refinery is not greater than 45 feet. U.S. Oil has under study, although no governmental approval has yet been sought or received, plans to extend its crude oil receiving pipeline from its present dock site in Blair Waterway, Tacoma, to the Port of Tacoma berth on Commencement Bay so that it may berth fully loaded tankers up to 125,000 DWT.

E. Sound Refining, Inc.'s refinery located at Tacoma, Washington has a processing capacity of 4,500 barrels per day. Crude oil is supplied to it only by tanker. The largest ship to transfer oil to the Sound refinery from its dock at Tacoma was 37,500 DWT. The largest fully loaded tanker which has docked at Sound's dock is 26,000 DWT. The depth at dockside at the Sound refinery is not greater than 32 feet.

20. In 1974, production of petroleum products by Washington refineries totaled approximately 300,000 barrels per day. Total consumption of petroleum products in Washington was approximately 189,000 barrels per day. Net exports of petroleum products totaled approximately 111,000 barrels per day, of which

approximately 46 percent were transported by barge or tanker. In December 1975, 93 percent of the tankers so employed were smaller than 40,000 DWT. The average size of these product tankers was 28,600 DWT.

21. The following table sets forth projections from 1977-1981 regarding production of crude oil from the Alaskan North Slope area as reported by the Maritime Administration in June 1975. Atlantic Richfield's share of this production and the aggregate share currently scheduled for delivery to Puget Sound refineries are as follows:

	1977	(Barrels Per Day) 1978	1981
Industry Total:	815,000	1,420,000	2,241,000
Puget Sound's Total			
Share:	122,250	213,000	336,150
Atlantic Richfield's			
Share:	149,000	260,000	448,000

It is currently anticipated that all the oil from Valdez, Alaska will be transported by tanker to ports on the West Coast. Current plans provide that 15 percent of all Alaskan oil will be transported to refineries in the Puget Sound area, and the remainder transported to San Francisco (40 percent) and Long Beach (45 percent). Of Atlantic Richfield's share, approximately 96,000 barrels per day for 1977, 1978 and 1981, respectively, are slated for the Cherry Point refinery.

22. The volume of oil to be moved from Alaska by tanker in 1980 will be more than 101 million short tons per year; the U.S. trade in crude oil by tanker between domestic ports in 1974 was 33 million short tons.

23. Four docking berths are under construction at the southern terminus of the Trans-Alaska Pipeline at Valdez, Alaska, which will accommodate fully loaded tankers up to 250,000 DWT. The depth at dockside will be no less than 75 feet and the berths

are scheduled to be completed in the summer of 1977. The Maritime Administration has estimated that approximately one-third of the tankers which will participate in the Alaska trade will be in excess of 125,000 DWT.

24. Atlantic Richfield intends to use the following vessels in the Alaska-West Coast trade: Sinclair Texas (50,000 DWT); Atlantic (Arco) Heritage (53,000 DWT); Arco Prudhoe Bay (70,000 DWT); Arco Sag River (70,000 DWT); Arco Anchorage (120,000 DWT); Arco Fairbanks (120,000 DWT); Arco Juneau (120,000 DWT); and two 150,000 DWT vessels not yet in service. Atlantic Richfield has contracted with the National Steel and Shipbuilding Company in San Diego, California to build the last two ships. (See Paragraphs 34 and 35). The 150,000 DWT vessels will have a 55-foot draft.⁴

25. Puget Sound is the only area on the West Coast of the United States south of Alaska containing a developed port with a controlling depth⁵ sufficient to accommodate tankers with a fully loaded draft in excess of 55 feet without lightering, i.e., without unloading a portion of the cargo before entry into port. The Atlantic Richfield facility at Cherry Point is presently the only docking facility in Puget Sound designed to accommodate such tankers. There are presently, off the coast of California near Long Beach, mono-buoys capable of accommodating tankers, one of which can accommodate tankers with a draft of 56 feet. The controlling depth at Long Beach Harbor is presently 55 feet. Standard Oil Company of Ohio has publicly announced plans under study, although no governmental approval has yet been sought or received, to dredge at Long Beach to provide a controlling depth sufficient to accommodate tankers with a draft of more than 55 feet. In addition, two companies, Seadock, Inc. and Louisiana Offshore Oil Port, Inc., have sought approval from

⁴Deadweight tonnage is the primary determinant of draft (i.e., the distance the hull protrudes below the water), but a vessel's dimensions (e.g., length, width) also affect its draft.

⁵Controlling depth is defined as the maximum draft vessel that can enter the port at extreme low tide.

the federal government to build deepwater ports in the Gulf of Mexico capable of accommodating tankers in excess of 200,000 DWT.

26. The Northern Tier Pipeline Company has announced plans to construct an oil transfer terminal at Port Angeles, Washington capable of receiving tankers in excess of 125,000 DWT. The Port Angeles terminal would connect, via a submarine pipeline of approximately 1.5 miles, with a pipeline to be constructed around Puget Sound, east across the State of Washington and to refineries in the Midwest. Approval to build the terminal at Port Angeles has been sought, but not yet received, from the Washington Department of Ecology. Other necessary governmental approval, both for the terminal and the pipeline, has not yet been sought or received. Plans call for completion of the pipeline no earlier than June 1979 at an estimated cost of no less than \$1.5 billion. No financing plans have yet been announced. The Northern Tier Pipeline Company is also considering an alternative pipeline route to cross Puget Sound under Admiralty Inlet.

The Northern Tier Pipeline Company is a venture consisting, *inter alia*, of the Burlington Northern Railroad, the Michael J. Curran Pipeline Company, and Butler & Associates.

In addition to transporting oil to the Midwest, the pipeline would have the capacity to carry oil needed by Atlantic Richfield, Shell, Mobil and Texaco at their Puget Sound refineries, both as presently existing and as proposed to be expanded. Before these refineries could connect to the pipeline, construction of an additional pipeline of approximately 100 miles in length from the southern terminus of the Transmountain Pipeline at Anacortes, Washington, would be necessary. A right-of-way which might be used for a connecting pipeline presently exists in the form of the right-of-way owned by the Olympic Pipeline Company, which has a product pipeline running from Anacortes, Washington, to Portland, Oregon. Currently there are no plans for any such connecting pipeline, nor is it certain that any such connecting pipeline, if constructed, will obviate the necessity for continuing

to supply the refineries by tanker which would unload at the docking facilities at each refinery.

27. Atlantic Richfield has three other refineries in the United States at Carson, California; Houston, Texas; and Philadelphia, Pennsylvania. All of these are substantially supplied by tanker. The refinery at Carson, California is supplied by tanker through the Port of Long Beach.

28. The Port of Long Beach is capable of accommodating fully laden tankers in excess of 125,000 DWT. From March 1972 through 1975, eighteen tankers in excess of 125,000 DWT have served Atlantic Richfield's Carson refinery through the Port of Long Beach. At least six of these tankers were fully loaded. A list of the tankers by date, name, size and flag is contained in Exhibit F.

29. Atlantic Richfield has plans to modify the docking facilities serving its Philadelphia refinery to accommodate tankers of up to and including 150,000 DWT. These plans have received the necessary governmental approval. Atlantic Richfield is also planning a terminal at Bayport, Texas to accommodate tankers of this size to serve its Houston refinery. The necessary governmental approval has been sought but not yet received. Vessels of 150,000 DWT must be lightered before entry at both ports, both currently and after the planned modifications, because the controlling channel depths are 40 feet.

30. Atlantic Richfield operates directly or indirectly eleven seagoing U.S. flag tankers, as follows:

Arco Anchorage	(120,000 DWT)
Arco Fairbanks	(120,000 DWT)
Arco Juneau	(120,000 DWT)
Arco Prudhoe Bay	(70,000 DWT)
Arco Sag River	(70,000 DWT)
Arco Heritage	(53,000 DWT)
Sinclair Texas	(50,000 DWT)
Atlantic Prestige	(34,000 DWT)

Arco Endeavor	(32,000 DWT)
Arco Enterprise	(32,000 DWT)
Atlantic Trader	(21,000 DWT)

31. Atlantic Richfield also operates, directly or indirectly, three foreign flag tankers, as follows:

Arco Colombia	(58,000 DWT)
Atlantic Challenger	(51,000 DWT)
Arco Competitor	(51,000 DWT)

32. Seatrain owns or charters twelve (12) oil tankers which are available for or under charter to commercial shippers and governments for varying periods. Seatrain's current fleet includes six (6) tankers of U.S. registry and six (6) tankers registered under foreign flags. Four (4) of the vessels are prohibited from entering Puget Sound under the size prohibition of H.B. 527. Six (6) of Seatrain's tankers are under 40,000 DWT and not subject to H.B. 527. The four tankers over 125,000 DWT are chartered, foreign flag vessels. Seatrain does not believe it is economically feasible to reduce the size of its vessels of more than 125,000 DWT to comply with the provisions of H.B. 527. Seatrain has on occasion used some of its tankers for the carriage of cargo other than oil.

33. Mobil, Shell and Texaco, and each of them, both own and charter tankers in excess of 40,000 DWT. Each of such companies regularly uses such tankers to supply its Puget Sound refinery. Mobil, Shell and Texaco, and each of them, also both own and charter a substantial number of tankers in excess of 125,000 DWT, although none of such tankers was used, prior to H.B. 527, to supply such companies' Puget Sound refineries.

34. Atlantic Richfield has contracted with two different shipyards to build a total of five tankers. The National Steel and Shipbuilding Company (NASSCO) in San Diego, California has contracted to build two tankers of 150,000 DWT each. These tankers will be U.S. flag and will be used in service between Valdez, Alaska and West Coast ports. These vessels are currently

scheduled for delivery in 1979 and 1980. All main propulsion machinery has been ordered for the vessels, as has considerable ancillary equipment. Steel fabrication is scheduled to begin in December 1977 and August 1978. Mitsubishi Heavy Industries in Japan has contracted to construct three tankers, two of which will have a capacity of 151,000 DWT, the third a capacity of 120,000 DWT. These three tankers will be foreign flag and, although not eligible for coastwise trade, will be used to deliver foreign crude oil to Atlantic Richfield's United States refineries. These vessels are currently scheduled for delivery in 1977. Construction of the main engines for the two 151,000 DWT tankers has commenced. Steel fabrication has begun on one of these tankers and is expected to begin in July 1976 on the other.

35. The cost of construction of the two 150,000 DWT Atlantic Richfield tankers on order from NASSCO is approximately \$80 million each, or an aggregate of approximately \$160 million. The aggregate construction cost of the three Japanese tankers is approximately \$90 million. The aggregate construction cost of the five vessels is thus over \$250 million.

36. Shell Oil Company has contracted with National Steel and Shipbuilding Company in San Diego, California to build two 188,000 DWT tankers which Shell intends to use in the Alaska-West Coast oil trade. These tankers are scheduled to be delivered in late 1977 or early 1978. Steel for construction has been ordered, but construction has not yet begun.

37. In 1970, Seatrain entered into a lease with a 20-year term, under which it occupies and operates most of the shipbuilding facilities of the Brooklyn Navy Yard in New York. Seatrain decided to enter shipbuilding in anticipation of the completion of the Trans-Alaska Pipeline, which was expected to require vessels constructed in the United States for carriage of crude oil from the terminus of the pipeline to West Coast ports. Seatrain spent approximately \$35 million to modernize and equip the shipyard facility. More than 1,700 people are employed at the shipyard, about 80 percent of whom are members of minority racial groups. Seatrain's operation of the shipyard has been assisted by two federal agencies, the Economic Development

Administration and the Maritime Administration. The four 225,000 DWT tankers which have been or are under construction at the shipyard have been built with construction-differential subsidy. None of these vessels could be used under federal law to transport oil from Valdez to Puget Sound unless some or all of the subsidy is refunded.

38. Seatrain Shipbuilding Corp. presently has under construction two (2) 225,000 DWT oil tankers, the *T. T. Stuyvesant* and the *T. T. Bay Ridge*. Construction contracts for these vessels were executed on June 30, 1972 and June 30, 1973, and the vessels' keels were laid and construction commenced on October 26, 1973 and August 23, 1974, respectively. As of January 31, 1976, the vessels were approximately 90.6 percent and 44.9 percent completed and scheduled for completion at the end of calendar 1976 and 1977, respectively. The vessels are being built to meet all federal laws and standards, and international conventions, none of which would prevent them from entering Puget Sound. Both vessels will be prohibited from entering Puget Sound by the size prohibition of Section 3(1) of H.B. 527. Seatrain does not believe it is economically feasible at the present stage of construction, and does not plan, to reduce the size of the vessels to comply with the 125,000 DWT limit imposed by H.B. 527.

39. Seatrain presently has no sale or charter commitment for either the *Stuyvesant* or *Bay Ridge*. Seatrain's ability either to sell the vessels upon completion or employ them profitably will depend upon future economic factors, primary among these being the demand for U.S. flag tankers for the carriage of oil in the U.S. foreign and domestic trades. The estimated cost of construction for the *Stuyvesant* is \$87.5 million and \$89.2 million for the *Bay Ridge*.

40. Seatrain has considered the utilization of the *Stuyvesant* and the *Bay Ridge* for the carriage of oil while loaded to less than maximum capacity, which would reduce the draft, or by transferring oil to smaller vessels (lightering). Draft can be reduced to 55 feet by light loading these vessels, and vessels of that draft can presently be accommodated at Cherry Point. No current economic analysis of such operation has been made.

41. During the last five years, Atlantic Richfield has had delivered to it five new tankers. The following table sets forth the dates upon which contracts for construction were executed, fabrication commenced and delivery took place:

Tanker	Contract Executed	Fabrication Started	Delivery Date
Arco Anchorage (120,000 DWT)	Oct. 1969	Oct. 1971	June 1973
Arco Juneau (120,000 DWT)	Oct. 1969	Nov. 1972	May 1974
Arco Fairbanks (120,000 DWT)	Oct. 1969	March 1973	Aug. 1974
Arco Prudhoe Bay (70,000 DWT)	Nov. 1968	July 1970	Dec. 1971
Arco Sag River (70,000 DWT)	Nov. 1968	Nov. 1970	May 1972

42. At the present time, the following Atlantic Richfield vessels are enrolled and licensed:⁶

Arco Prudhoe Bay	(70,000 DWT)
Arco Sag River	(70,000 DWT)
Arco Heritage	(53,000 DWT)
Sinclair Texas	(50,000 DWT)
Atlantic Prestige	(34,000 DWT)
Arco Endeavor	(32,000 DWT)
Arco Enterprise	(32,000 DWT)
Atlantic Trader	(21,000 DWT)

43. When the Trans-Alaska Pipeline System begins operation, most Atlantic Richfield vessels operating between Valdez and West Coast ports will be enrolled and licensed.

44. The world's petroleum consumption in 1973 was 2.76 billion tons. Of this, approximately 60 percent was transported by tanker. World trade in petroleum shipped by tanker averaged 30 to 35 million barrels per day.

⁶"Enrolled and licensed" refers to vessels engaged exclusively in domestic trade. See ¶ 135 *infra*.

45. Water transportation of petroleum and petroleum products, almost all by tanker, represented over 40 percent of all United States waterborne commerce in 1973 and 1974. Water transportation of petroleum and petroleum products represented 25 percent of all waterborne commerce in Washington in 1973 and 1974.

46. Water transportation of petroleum and petroleum products in Washington represented 2 percent of the total national water transportation of petroleum and petroleum products in 1973 and 1974.

47. The United States now imports over 35 percent of its oil requirements. More than 80 percent of the amounts imported are brought into this country by tanker. In 1974, U.S. imports of petroleum and petroleum products by tanker averaged 5.4 million barrels per day.

48. In 1974, imports of petroleum and petroleum products to Puget Sound by tanker averaged an estimated 129,000 barrels per day.

49. The economy of the State of Washington and the residents of Puget Sound are dependent on oil and the products produced from oil. No crude oil is produced in Washington and thus all crude oil and all products refined or derived from oil and consumed by Washington residents must either be imported or manufactured in Washington from imported crude oil.

50. As a result of the Arab Oil Embargo, which began in October of 1973 and continued to March, 1974, it has become a national goal of high priority to reduce American reliance on foreign petroleum supplies and attain domestic energy self-sufficiency. Nevertheless, it is likely that the United States will continue to import oil for the next decade. This oil, as well as oil from Alaska's North Slope, will be transported to the U.S. primarily by tanker.

51. It was reported by the Maritime Administration in December 1974 that 94 percent of U.S. oil imports were being transported in foreign flag tankers.

52. As of December 1975, there were 727 tankers over 125,000 DWT in the world fleet, with total capacity of 167 million DWT, constituting 59 percent of the total world capacity. There were an additional 344 vessels over 125,000 DWT on order or under construction, with total capacity of 88 million DWT. (That a vessel is "on order or under construction" does not, of course, mean that construction of the vessel will in fact be undertaken or completed, nor does the existence of such tankers in the world fleet mean that, absent H.B. 527, such vessels would be used in Puget Sound.) The world tanker fleet is registered in approximately 55 countries with Liberia accounting for 29 percent of the total tonnage in 1974. European maritime nations registered nearly 50 percent of world tanker tonnage in 1974 and the United States only 4 percent. Eleven percent of the world tanker tonnage was of Japanese registry.

53. As of December 1975, the world tanker fleet contained over 100 million DWT in surplus capacity, up from 60 million DWT in September 1975. Of that surplus capacity, 37.5 million DWT was laid up and inactive.

54. From September 1974 through November 1975, 172 tankers on order were cancelled. In November 1975 orders for 14 new tankers were cancelled, 7 of which were to be in excess of 125,000 DWT. Of the 172 cancellations, 131 were to be in excess of 100,000 DWT and 93 of those 131 were to be in excess of 200,000 DWT.

55. As of November 1, 1975, there were 249 tankers in the privately-owned U.S. flag tanker fleet, with total capacity of more than 9 million tons, approximately 3.4 percent of the total world capacity. Four U.S. flag tankers were over 125,000 DWT, as follows:

Massachusetts	265,000 DWT
Brooklyn	225,000 DWT

Williamsburg	225,000 DWT
Mobil Arctic	129,000 DWT
<hr/> Total Capacity	844,000 DWT

The four U.S. flag vessels over 125,000 DWT now in service presently carry crude oil from foreign ports to United States ports not located on Puget Sound. Atlantic Richfield Company does not presently intend to use any of these four vessels. Mobil Oil Company, however, intended prior to H.B. 527 to modify its dock facility as indicated in paragraph 19A *supra* and use the *Mobil Arctic* to deliver oil to its Ferndale refinery.

56. As of December 31, 1975, there were 54 U.S. flag tankers on order or under construction, with a total capacity of approximately 7.1 million DWT. Twenty-two (22) such ships, with an aggregate capacity of more than 5 million DWT, were larger than 125,000 DWT; 18 such ships, with an aggregate capacity of 1.6 million DWT, were between 40,000 DWT and 125,000 DWT; and 14 such ships, with an aggregate capacity of 472,900 DWT, were under 40,000 DWT.

57. The Merchant Marine Act of 1970, Pub. L. No. 91-469, 84 Stat. 1018, established a federal policy encouraging construction of U.S. flag vessels, including oil tankers, in United States shipyards in order to develop an American fleet able to compete in foreign trade. The announced goal of Congress was the construction of 300 vessels by 1980. Pursuant to this program, the federal government pays the difference in construction costs between tankers constructed in American and foreign shipyards, up to a maximum percentage (50% in 1970, now 35%). On December 1, 1975, 38 vessels, including 22 tankers, 9 of which were in excess of 125,000 DWT, were either on order or under construction pursuant to approved construction-differential contracts. The Maritime Administration reports that as of January 31, 1976, it has paid out more than \$347.6 million dollars on construction-differential subsidies for tankers under the Act. Nearly \$197 million of this amount has been paid for tankers in excess of 125,000 DWT. For tankers still on order or under

construction, the Maritime Administration has committed another \$252.9 million in subsidy funds, \$223.7 million of which is for tankers in excess of 125,000 DWT.

58. The following tankers were on order or under construction with the aid of the construction-differential subsidy as of December 1, 1975:

Builder	No.	DWT (each vessel)
Bethlehem Steel Corp.	4	265,000
National Steel & Ship- bldg. Co.	6	89,700
	3	38,300
Newport News Shipbldg. & Dry Dock Co.	3	390,770
Seatrains Shipbldg. Co.	2	225,000
Todd Shipyards Co.	4	35,000
Total	22	

None of these vessels could be used under federal law to transport oil from Valdez to Puget Sound unless some or all of said subsidy is refunded. Each vessel could, however, deliver oil from foreign ports to Puget Sound under federal law without refunding said subsidy.

59. Nine tankers had been constructed and delivered under the construction-differential subsidy program as of December 1, 1975, as follows:

Builder	No.	DWT (each vessel)
National Steel & Shipbldg. Co.	3	38,300
	3	87,000
Seatrains Shipbldg. Co.	2	225,000
Bethlehem Steel Corp.	1	265,000
Total	9	

None of these vessels could be used under federal law to transport oil from Valdez to Puget Sound unless some or all of said subsidy is refunded. Each vessel could, however, deliver oil from foreign ports to Puget Sound under federal law without refunding said subsidy.

60. The Merchant Marine Act of 1970 extends to tankers the operating-differential subsidy program established under the Merchant Marine Act of 1936 in 46 U.S.C. §§ 1171 *et seq.* This program seeks to equalize the disparity in operating costs between those of American ships and their foreign competitors. Only U.S.-flag tankers engaged in the foreign commerce of the United States qualify for the subsidy; the program does not cover vessels in interstate trade.

61. Title XI of the Merchant Marine Act of 1936, 46 U.S.C. §§ 1271-1280, as amended, authorizes the Secretary of Commerce to guarantee the payment of principal and interest on obligations made to finance the construction, reconstruction and reconditioning of vessels, including tankers, designed principally for research or for commercial use in the domestic or foreign trade of the U.S. Public Law No. 93-70, 87 Stat. 168, increased the limitation on the amount of outstanding obligations which may be guaranteed from \$3 billion to \$5 billion. As of June 30, 1975, \$4.2 billion in obligations were outstanding under the program. Of this amount \$1.1 billion involved tankers in operation (\$418 million), on order (\$198 million), or under construction (\$414 million). On the same date, applications were pending for \$667.5 million in loan guarantees for 13 tankers. Public Law No. 94-127, 89 Stat. 680 (1975), increases the limitation on the amount of outstanding obligations which may be guaranteed from \$5 billion to \$8 billion.

62. Seatrain's *T. T. Stuyvesant* and the *T. T. Bay Ridge* are being constructed with the assistance of construction-differential subsidies under the Merchant Marine Act. As of January 31, 1976, \$121 million has been expended on the construction of these vessels, of which \$37.5 million has been billed to the U.S. Government for construction-differential subsidy. In addition, Seatrain has received construction loan guarantees in excess of

\$64 million under Title XI of the Merchant Marine Act. During 1975, Seatrain Shipbuilding Corp. received loan guarantees totaling \$40 million from the Economic Development Administration to complete construction of the two vessels. These guarantees were made after analysis by the Maritime Administration of the economic justification for further investment in the partially constructed vessels. The Maritime Administration considered in this analysis the employment of the *Stuyvesant* and *Bay Ridge* in the carriage of crude oil in the Alaska-West Coast trade.

63. The Office of Technology Assessment of the United States Congress reports that U.S. shipyards have estimated that construction of a new tanker with a double bottom underneath all cargo tanks increases its construction costs by approximately 3 percent over a comparable tanker with a single bottom. The Office of Technology Assessment has estimated that construction of a new tanker with twin screws increases its cost by approximately 8 percent over a comparable tanker with a single screw.

64. Each of the tankers owned by Atlantic Richfield services more than one of its refineries. In planning the transport of crude oil to its refineries, Atlantic Richfield schedules tanker deliveries approximately three months in advance. Between the time of this scheduling and the arrival of the tanker, however, the refinery's needs may change for a variety of reasons, *e.g.*, changes in demand for product or product mix, labor or operating difficulties at the refinery or vessel delays in loading or en route. In order to meet these changed needs efficiently, Atlantic Richfield may and frequently does change, after scheduling is completed and up to the time of actual delivery, either the destination of the tanker or the amount of crude oil to be off-loaded at a particular refinery. Atlantic Richfield also makes such schedule changes with vessels under charter except where the charter agreements do not permit.

65. Oil companies, including Atlantic Richfield, commonly engage in exchanges of crude oil and petroleum products with other oil companies for mutual economic advantage. These transactions, which occur on a worldwide basis, are of various types and include exchanges involving shipments entering and

leaving Puget Sound. Exchanges are undertaken, *inter alia*, to:

a. Alleviate "spot" shortages and solve timing problems in the arrival of crude shipments at a refinery;

b. Adjust the different grades and types of crude oil arriving at a refinery so that the refinery may operate at maximum efficiency; and

c. Effect transportation savings by assuring that shipments of crude oil travel the shortest possible distance from the place of production to the refinery.

66. In most situations, the unit cost of transporting oil to refineries by larger tankers is lower than such transport by smaller tankers. For example, if a fully-loaded 75,000 DWT tanker is compared with a fully-loaded 150,000 DWT tanker, both constructed in the same shipyard, flying the same flag and having the same degree of modern features and automation, the 150,000 DWT tanker will be cheaper to construct and operate on a per barrel basis for the following reasons, *inter alia*:

a. The crew required for each tanker will be approximately the same, *i.e.*, approximately 28;

b. The percentage increase in horsepower required to operate the larger vessel will be less than the percentage increase in tonnage;

c. The cost of constructing and outfitting a 150,000 DWT tanker will be less than the cost of building two 75,000 DWT tankers; and

d. The cost of maintaining a 150,000 DWT tanker will be less than the cost of maintaining two 75,000 DWT tankers.

67. The Maritime Administration's Office of Policy and Plans has estimated that the cost of shipping a barrel of oil from the

Persian Gulf to the United States on a 50,000 DWT tanker is \$2.00 to \$3.00; on a 250,000 DWT tanker, the cost is \$1.00 to \$1.50. The Oceanographic Commission of Washington has estimated that the cost of shipping a barrel of oil from the Middle East to Cherry Point on an 80,000 DWT tanker is approximately \$1.65; on a 120,000 DWT tanker \$1.40; on a 250,000 DWT tanker \$1.28.

68. Atlantic Richfield has estimated that the cost of transporting oil from Valdez, Alaska, to Cherry Point on comparably equipped tankers of 90,000 DWT, 120,000 DWT and 150,000 DWT is expected to be approximately \$.47 per barrel, \$.40 per barrel and \$.36 per barrel respectively. The Oceanographic Commission of Washington has estimated that the cost of transporting oil from Valdez, Alaska, to Cherry Point on comparably equipped tankers of 60,000 DWT, 120,000 DWT, and 250,000 DWT is approximately \$.376 per barrel, \$.282 per barrel, and \$.259 per barrel respectively.

69. In the world charter markets it is currently cheaper on a per-barrel basis to charter a 150,000 DWT tanker rather than a 120,000 DWT tanker for the Persian Gulf-Cherry Point trade. The present cost differential is approximately \$.094 per barrel.

70. The route usually taken by vessels traveling between the Pacific Ocean and Cherry Point or other Northern Puget Sound ports is to pass through the Strait of Juan de Fuca and into Puget Sound, then to turn north and pass through Rosario Strait. The route usually taken by vessels traveling between the Pacific Ocean and Vancouver or other Canadian ports in British Columbia is to pass through Haro Strait, rather than Rosario Strait. Both routes require transit through U.S. waters. The vessels retrace their paths on their return voyage to the Pacific Ocean. From the point where the vessel crosses the line between Discovery Island light and New Dungeness light to Cherry Point via Rosario Strait is a distance of 45 nautical miles, as shown on the navigational charts filed herewith as Exhibit G. While on this route, except while passing through Rosario Strait, vessels are instructed to proceed in separated traffic lanes pursuant to Coast Guard

regulations described in paragraphs 126-127 *infra* which establish a Vessel Traffic Control System (VTS) for Puget Sound. The traffic lanes are each 1,000 yards wide and are separated by 500 yard wide separation zones. The Coast Guard prohibits the passage of more than one 70,000 DWT vessel through Rosario Strait in either direction at any given time. During periods of bad weather, the size limitation is reduced to approximately 40,000 DWT. The minimum water depth is at least sixty feet at all points along this route. Tankers bound for southern Puget Sound ports such as Tacoma proceed through Admiralty Inlet in traffic lanes as shown on Exhibit G. The Puget Sound VTS includes radar coverage from Seattle north to the southern extreme of the San Juan Islands.

71. The portions of the Strait of Juan de Fuca, Rosario Strait, Haro Strait, Puget Sound and adjacent navigable waters located in the United States are navigable waters of the United States and sustain foreign and interstate commerce. Likewise, said portions are waters of the State of Washington.

72. The Canadian Coast Guard maintains a traffic control system under the authority of the Canadian Ministry of Transport, called the Vessel Traffic Management System, to enhance the safety of vessel traffic movement in Canadian waters. This system is voluntary and not all vessels comply. The Canadian Ministry of Transport has established a Vessel Traffic Management Center in West Vancouver, B.C. which administers the Vessel Traffic Management System (VTM) for the Vancouver traffic zone. The Vancouver traffic zone includes the western coastal waters of Canada east of Vancouver Island, including the Strait of Juan de Fuca and portions of Queen Charlotte Sound. By agreement between the Commandants in Vancouver and Seattle, the Canadian Coast Guard and the United States Coast Guard have established a system of information exchange to facilitate the purposes of their traffic systems. Pursuant to this agreement, the U.S. Puget Sound Vessel Traffic System (VTS) applies to traffic in the Strait of Juan de Fuca between the Pacific Ocean and Race Rocks, regardless of the international boundary line. This portion of the VTS is also voluntary and between 20 percent and 50 percent of all vessels comply. The Canadian VTM applies to Haro

Strait traffic, north and south-bound regardless of the international boundary. Likewise, the Canadian VTM applies to traffic in the Strait of Georgia south of the 49th parallel though most of the designated traffic lane is in U.S. waters. When using the VTS or VTM, Canadian-bound traffic utilizing the Rosario Strait transfers from the U.S. VTS to the Canadian VTM when abeam of Patos Island, though still in United States territorial waters. The Canadian VTM includes radar coverage in Vancouver Harbor.

73. Canadian oil refineries and distribution points are located near Vancouver, B.C. at North Burnaby (Chevron Oil, Inc.), Port Moody (Gulf Oil, Inc.), Ioco (Imperial Oil of Canada, Ltd.), and Shelburn (Shell Oil, Inc.). These petroleum facilities are normally reached from the Pacific Ocean through the Strait of Juan de Fuca only by passage through Puget Sound as defined by H.B. 527. Because petroleum refineries in British Columbia normally receive crude oil by pipeline from Canadian oil fields, carriage of crude oil by tanker to these facilities has been occasional and irregular. The parties are not aware of any traffic to these facilities by tankers in excess of 125,000 DWT and refined products from these facilities primarily have been transported in tankers of less than 40,000 DWT. Prior to passage of H.B. 527, tankers bound for Canadian ports through Haro Strait did not generally use pilots licensed by the State of Washington.

74. Atlantic Richfield has used state-licensed pilots on all tankers entering Puget Sound to the present time. When the Trans-Alaska Pipeline System begins operation, and Atlantic Richfield's vessels, sailing under enrollment, begin to make substantial numbers of voyages from Valdez to Cherry Point, Atlantic Richfield plans to have its masters qualify as federally-licensed pilots in Puget Sound. Atlantic Richfield has already taken steps to encourage its masters to obtain such federal licenses and one master of Atlantic Richfield's vessels has recently qualified as a federally-licensed pilot between Port Angeles and Cherry Point.

75. No tanker presently afloat has all of the design features necessary to satisfy the requirements of Section 3(2) of H.B. 527.

76. Neither Atlantic Richfield nor Seatrain presently has any tankers, whether owned or under long-term charter, which have (a) shaft horsepower in the ratio of one horsepower to each 2.5 DWT, or (b) twin screws, or (c) double bottoms underneath all oil and liquid cargo spaces. Some, but not all, of Atlantic Richfield's and Seatrain's tankers are equipped with collision-avoidance radar. Neither Atlantic Richfield nor Seatrain presently has plans to retrofit its tankers with all of the above features because such retrofit is not economically feasible under current and anticipated market conditions. The Seatrain vessels in the 225,000 DWT class, currently under construction, do not have requirements (a) through (c), above, but may include collision-avoidance radar.

77. The cost and use of tugboats prior to the effective date of H.B. 527 varied with their availability and location. Such tugs were used normally only for the immediate approach to and for docking and undocking from the Cherry Point and other oil terminals in Puget Sound. Since no tanker owned by or available to Atlantic Richfield has all of the features set forth in Section 3(2), it is necessary under H.B. 527 that tugboats now meet each oil carrying tanker in excess of 40,000 DWT as it enters Puget Sound from the Strait of Juan de Fuca and, if it is not fully unloaded at Cherry Point, escort it back to the Strait. This increased use of tugs increases the cost of tugboat service. The amount of such increase varies with the location and extent of usage of such tugs. The following table sets forth the tug fees paid directly by Atlantic Richfield for tankers which have called at the Cherry Point facility subsequent to the effective date of H.B. 527, the amount of such fees attributable to docking services, and the amount of such fees attributable to escort services required by H.B. 527:

Date(s)	Tanker	Docking & Escort		Total
		Undocking	Fee	
9/18-9/19/75	Arco Fairbanks	\$ 5,270	\$9,585	\$15,855
9/19-9/21/75	Kongshav	5,550	7,525	13,075
10/20/75	Arco Prudhoe Bay	2,800	8,680	11,480
10/24-10/26/75	Arco Anchorage (delayed)	11,620	9,110	20,730
10/30-11/2/75	Arco Juneau	5,710	4,870	10,580
12/8-12/9/75	Clementina	6,030	3,925	9,955
12/20-12/23/75	Arco Fairbanks	6,670	8,780	15,450

78. Since H.B. 527 became effective in September 1975, the average escort cost, the additional cost incurred as a result of the tug escort provision of H.B. 527, for tankers calling at Cherry Point as set forth in Paragraph 77 *supra* has been approximately \$7,500. If this added cost continues in accord with Atlantic Richfield's experience since the effective date of H.B. 527, additional tug fees attributable to H.B. 527 will total approximately \$277,500 per year. [$\$7,500$ (escort cost) \times 37 (the number of ships in excess of 40,000 DWT calling at Cherry Point in 1975.)] Mathematically allocating the \$7,500 average additional cost for vessels of compliance with the tug escort provision of H.B. 527 to the barrels of oil carried on the vessels yields \$.0116 per barrel for a tanker of 90,000 DWT and \$.0087 per barrel for a tanker of 120,000 DWT.

79. To the present time, no reduction in the amount of oil processed at Puget Sound refineries has occurred as a result of the enactment of H.B. 527. All six oil companies operating refineries in Puget Sound presently supply their Puget Sound refineries using tankers of less than 125,000 DWT.

80. The total surface area of the State of Washington is approximately 44,590,080 acres. (A map of Washington is attached as Exhibit E.) Of this amount, approximately 1,984,000 acres or 4 percent are covered by marine waters. Puget Sound contains approximately 1,280,000 acres of these marine waters measured at mean high water.

81. Puget Sound is an estuary located in northwest Washington State as shown on Exhibit E. An estuary is defined as a semi-enclosed, coastal body of water which has free connection with the open sea and within which seawater is measurably diluted with freshwater derived from land drainage. Estuaries are zones of ecological transition between fresh and saltwater. There is water and light in the estuarine zone together with dissolved nutrients derived from both land and sea. Estuaries are generally productive habitats and serve as spawning grounds and/or nursery areas for many marine species. These species include animals and plants which live in the bottom, on the

bottom, in the water, on the water, and in marshes which border the estuary. Open water, eelgrass and tideflats provide food and shelter for migratory birds. In competition with fish and wildlife in the use of estuaries are recreational boating, fishing, beach walking, navigation, commerce and other uses.

82. The shoreline and bottom configuration of Puget Sound is irregular and characterized by many channels, bays and inlets. Numerous islands, marshes, tidal flats and narrow beaches are also characteristic of the Sound. Rivers and streams flowing from the Cascade and Olympic mountain ranges discharge into Puget Sound. The distinctive topography of the Sound, including its considerable depth, is primarily a result of glacial activity. This combination of characteristics is shared by three other large estuarine systems in the United States: Cook Inlet, Alaska; Prince William Sound, Alaska; and the Alexander Archipelago of southeast Alaska.

83. Puget Sound is inhabited by various forms of life. There are more than 2,000 different species located in or on the waters of Puget Sound or on immediate or adjacent uplands within one mile of Puget Sound. A listing of some of the species is set forth in Exhibit H, which also designates those species of commercial or recreational value.

84. Puget Sound is subject to a variety of weather conditions. Fog of varying intensity and duration occurs in the Puget Sound area, as set forth in Exhibit I, and on occasion substantially impedes visibility. Tidal currents are common to many areas of Puget Sound, as set forth in Exhibit IA. Wind conditions vary with time, season and location as set forth in Exhibit J; at Bellingham, for example, winds average approximately 5-10 miles per hour, although occasionally exceeding 30 miles per hour in winter. The hours of operation of fog horns in the Puget Sound area are set forth in Exhibit K.

85. Under the federal and state water pollution control laws, 80 percent of the waters of Puget Sound have been designated as potentially Class AA (extraordinary) quality; 18 percent as

potentially Class A (excellent) quality; 2 percent as potentially Class B (good); and 0.5 percent as potentially Class C (fair) quality. It has been estimated by the Washington State Department of Ecology that, at the present time, 89 percent of those waters designated as potentially Class AA actually meet present Class AA quality standards; 70 percent of Class A waters meet present Class A quality standards; 43 percent of Class B waters meet present Class B standards; and 33 percent of Class C waters meet present Class C standards. The definitions of these classes, together with their specific application to Puget Sound are set forth in Exhibit L.

86. The Washington Shoreline Management Act of 1971, R.C.W. ch. 90.58, is a comprehensive land and water use planning statute affecting substantially all salt and fresh water areas and adjacent lands in Washington. Under the statute, local governments may originate use and development plans for all affected areas in accordance with guidelines developed by the state; if a local government does not act, the state will do so. Certain areas are defined in the statute as "shorelines of statewide significance". In the event of a dispute between the affected local government and the state with respect to "shorelines of statewide significance," the state plan prevails.

"Shorelines of statewide significance" within the meaning of the statute include all tidelands adjoining the Pacific Ocean and certain designated tidelands adjoining the Strait of Juan de Fuca and Puget Sound, all natural and artificial lakes of 1,000 acres or more, most substantial rivers and streams in Washington, and 200 feet of upland adjacent to such tidelands, lakes, rivers and streams. The term also includes all of the beds of the Strait of Juan de Fuca, the Pacific Ocean and Puget Sound lying seaward of the lowest line on the land reached by the receding tide. Eleven percent of the tidelands and adjacent uplands, constituting wetlands,⁷ of Puget Sound are shorelines of statewide significance.

⁷Wetlands are defined in the Washington statute as "those lands extending landward for two hundred feet in all directions as measured on a horizontal plane from the ordinary high water mark; floodways and contiguous floodplain areas landward two hundred feet from such floodways; and all marshes, bogs, swamps,

87. The bays, channels, salt water marshes, and inland waters of Puget Sound provide habitats for many species of finfish and shellfish. Fish packing and canning are industries in the Puget Sound area. The total annual contribution of the Puget Sound fishery to Washington State economic activity has been estimated by the State of Washington to have been \$170 million in 1973. This figure includes indirect expenditures (e.g., for construction, transportation) as well as direct expenditures (e.g., for canning and packing). This figure also includes those amounts set forth below in paragraphs 88 and 89.

88. There are approximately 213 species of finfish inhabiting Puget Sound. These species are set forth in Exhibit H. Of these, approximately 81 are of commercial or recreational value. Examples of these species are salmon, steelhead, herring, smelt, lingcod. In 1973, the commercial catch of finfish in Puget Sound was valued by the State of Washington at approximately \$36.3 million. In 1973 the sports catch of finfish in Puget Sound was valued by the State of Washington at approximately \$10.4 million. Finfish habitat, commercial finfishing areas, and sports finfishing areas are set forth in Exhibit M.

89. There are 327 species of shellfish and other marine invertebrates inhabiting Puget Sound. These species are set forth in Exhibit H. Of these, approximately 46 are of commercial or recreational value. Examples of these species are Dungeness crab, Olympia oyster, Pacific oyster, Manila clam, geoduck, octopus, and butter clam. The commercial shellfish catch in Puget Sound was valued by the State of Washington at approximately \$3.1 million in 1973. The sports shellfish catch was valued by the State of Washington at approximately \$450,000 in 1973. Shellfish habitats, commercial shellfishery areas and sports shellfishery areas of Puget Sound are set forth in Exhibit M.

and river deltas associated with the streams, lakes, and tidal waters which are subject to the provisions of this chapter; the same to be designated as to location by the department of ecology: *Provided*, That any county or city may determine that portion of a one-hundred-year-flood plain to be included in its master program as long as such portion includes, as a minimum, the floodway and the adjacent land extending landward two hundred feet therefrom; * * * "R.C.W. § 90.58.030 (2)(f) (Supp. 1975).

90. In 1975 the Washington State Department of Fisheries issued eight permits for salmon rearing in Puget Sound. In the same year the Department issued 264 licenses (\$15 each) for commercial clam and oyster farms, most of which were for Puget Sound farms. Washington aquaculture corporations employed in 1975 an estimated 1250-1500 people on Puget Sound. Approximately 5 miles south of Cherry Point is Lummi Bay, the site of the Lummi Indian Tribe aquaculture program, which is primarily concerned with the propagation and sale of silver salmon, King salmon, steelhead, trout, and oysters. The federal government has expended a total of \$3.4 million on behalf of the aquaculture program of the tribe. The operating expense of the project in 1974 was approximately \$1 million.

91. Puget Sound is inhabited by various species of marine mammals, including river otter, harbor seal, northern sea lion, harbor porpoise, killer whale and pilot whale as set forth in Exhibit H.

92. There are approximately 127 species of birds which inhabit, including those which migrate or winter in, the coastal areas of Puget Sound. These species are listed in Exhibit H. Of these, approximately 21 are of recreational importance to hunters. Examples of these species are snow goose, mallard, widgeon, canvas back, scaup, and goldeneye. Waterfowl are hunted in and near Puget Sound. In 1973 the State of Washington estimated the value of the sports kill of ducks and geese in and near Puget Sound was approximately \$1.1 million. Puget Sound is a wintering area for waterfowl from Alaska, western Canada and eastern Russia, and for other birds.

93. It is unknown how many, beyond a de minimis number, or to what extent, beyond a de minimis amount, finfish, shellfish, marine mammals or birds in and around Puget Sound would be affected adversely by an oil spill. Any such effect would depend upon variables such as the amount and type of oil spilled, the location of the spill, the success of efforts to contain or clean up the oil and the prevailing weather and water conditions at the time and thereafter. The possible effects of an oil spill are discussed in paragraph 108 *infra*.

94. The beds of Puget Sound (that area below extreme low tide), the tidelands of Puget Sound (that area between extreme low tide and the line of vegetation or mean high tide) and the waterfront lands adjacent thereto (excluding industrial, commercial and residential improvements of any type) have a value which is extremely difficult to quantify, but which has been estimated by the State of Washington to be in excess of \$2 billion.

95. The waters of Puget Sound support various recreational activities such as boating, swimming, water skiing and skin diving. The U.S. Army Corps of Engineers and Bureau of Outdoor Recreation estimated in 1968 that more than 30 percent of the residents of the 12 counties adjacent to Puget Sound engaged in some form of recreational boating. The State of Washington has estimated that more than \$125.4 million were spent on boating activities in the Puget Sound area in 1972. (This figure includes purchases of boats, engines, trailers, accessories, docking and fuel.)

96. Nearly all of the beds of Puget Sound are owned by the State of Washington. Of the 2,095 miles of tideland frontage of Puget Sound, approximately 43 percent are owned by the State of Washington.

97. The population of the State of Washington was approximately 3,448,100 in the year 1974. Approximately 65 percent (or 2,241,300) of the residents of the State of Washington reside in the 12 counties which border Puget Sound. Of these, approximately 1,794,000 reside in the Everett-Seattle-Tacoma metropolitan area.

98. Many portions of Puget Sound are beautiful, *i.e.*, aesthetically pleasing to the human eye. Although not quantifiable in dollar terms, it has obvious aesthetic values.

99. It is unknown to what extent, beyond a de minimis amount, beds, tidelands, waterfront uplands or other real or personal property would be affected adversely by an oil spill. Any

such effort would depend upon variables such as the amount and type of oil spilled, the location of the spill, the success of efforts to contain or clean up the oil and the prevailing weather and water conditions at the time and thereafter. The possible effects of an oil spill are discussed in paragraph 108 *infra*.

100. Puget Sound is the site of a number of fish and wildlife preserves and refuges. The federal government operates 13 wildlife preserves or refuges in or bordering on Puget Sound. These 13 preserves comprise 2,300 acres. The State of Washington operates two oyster preserves on Puget Sound, comprising 12,000 acres. The Nature Conservancy, a private wildlife conservancy organization, operates four bird refuges or preserves in the Puget Sound area; these refuges comprise 384 acres. One of these, Foulweather Bluff, is located on Hood Canal. The other three, Waldron Island, Deadman Island and Goose Island, are located in the San Juan Islands.

101. There are presently 158 federal, state, county and local public parks or recreation sites located on or abutting Puget Sound. A list of these parks and state park visitations are found in Exhibit N. Privately operated parks and recreation sites are also found on Puget Sound.

102. The State of Washington estimates that in 1973 approximately 4.5 million person nights and \$92.1 million were spent by tourists in the 12 counties adjacent to Puget Sound. It is difficult to ascertain the purpose of such visits or the activities in which such tourists engage, but Puget Sound attracts and is used by many of these tourists.

103. The Washington State Ferry System operates daily 11 major ferry routes to and from points on Puget Sound. Besides being used as a means of transportation by residents, the state ferry system serves as an attraction and transportation for tourists in Puget Sound.

104. Puget Sound functions as an area for the conduct of scientific research and educational programs. The University of Washington operates a marine station at Friday Harbor, on San

Juan Island, at which the University conducts research and educational programs. More than \$1 million is spent annually on the University's Institute for Marine Studies at Friday Harbor. Western Washington State College (Bellingham) operates a marine station at Shannon Point, near Anacortes. Walla Walla College maintains a similar facility at Deception Pass, near Anacortes. Other institutions of higher education in Washington, including the University of Puget Sound (Tacoma) and Evergreen State College (Olympia), also conduct scientific research and educational programs on or pertaining to Puget Sound. The State of Washington, through its Department of Ecology, Department of Fisheries, Department of Game and Department of Natural Resources, among other state departments and agencies, conducts research on Puget Sound and operates a number of marine stations. Research is also conducted by local and municipal agencies and private parties. Research is also conducted on Puget Sound by the National Oceanographic and Atmospheric Administration (NOAA), whose Northwest Regional Headquarters is located in Seattle.

105. Puget Sound is a water resource subject to many competing uses, as set forth in paragraphs 83 through 104 and 118, some of which adversely affect the availability and desirability of this water resource for other such uses.

106. In gross, the waters, beds and tidelands of Puget Sound are more extensive and economically significant than other non-Pacific Ocean marine water bodies in the State of Washington.

107. The Oceanographic Commission of Washington reported in January 1975 on three sites located west of Puget Sound within the State of Washington (and therefore not subject to the provisions of H.B. 527) which it considered reasonably developable as port sites capable of receiving tankers in excess of 125,000 DWT. Facilities to receive tankers in excess of 125,000 DWT do not presently exist at any of the reported sites. Except as set forth in Paragraph 26 *supra*, no governmental approval has either been sought or received for construction of such facilities.

108a. Oil spilled into Puget Sound has a significant potential for causing injury or death to biota which live in, on and adjacent to the waters of Puget Sound, such as waterfowl, marine mammals and other marine organisms. It also has a significant potential for damaging real and personal property, both publicly and privately owned, which underlies, is within, or borders upon the waters of Puget Sound. It may also restrict the availability of the waters and beaches of Puget Sound for public use.

b. The greater the amount of oil spilled into the waters of Puget Sound the greater the potential for causing injury, death or damage as stated in paragraph 108(a) *supra*.

c. The potential for injury, death or damage as described in paragraph 108(a) *supra* arising from oil spilled into the waters of Puget Sound varies based upon a number of factors including, among others, the:

1. Amount of oil spilled
2. Location of the oil spill
3. Type of oil spilled
4. Temperature of the water
5. Temperature of the air
6. Wind and other weather conditions
7. Water currents
8. Tidal level
9. Season of the year
10. Capability of humans to clean up oil
11. Response time
12. Coordination and cooperation between various clean-up participants — private and public.

109. The National Academy of Sciences in its recent report entitled "Petroleum in the Marine Environment" concluded with respect to the effects of oil spills, as follows:

"A review of the literature (Table 4-1) shows that a limited number of documented studies exist that consider the biological, chemical, and physical acute and long-term effects of oil in the marine environment. Because most studies have been made in estuaries, little data are available concerning effects on the open ocean. However, certain generalizations

about various aspects of oil in the marine environment can be made.

"Whereas the concentration of petroleum hydrocarbons dissolved in water is generally low (10 ppb) (Gordon and Prouse, in press), it was found to be much higher in sediments, ranging from 1,500 to 5,700 ppm in polluted coastal sediments (natural indigenous hydrocarbons in sediments in nearly unpolluted areas ranged from 26 to 130 ppm). On the outer coastal shelf, concentration in sediments might be as high as 20 ppm, whereas in the deep ocean 1-4 ppm was the usual concentration (Farrington and Medeiros, personal communication; Farrington and Quinn, 1973; Blumer and Sass, 1972b).

"In general, where damage was severe, the oil spill was massive relative to the size of the affected area, and the spill was confined naturally or artificially to a limited area of relatively shallow water for a period of several days. Deleterious effects may have been increased by storms or heavy surf water mixed with oil and sediments in the affected area. These effects were also generally localized, ranging from a few miles to tens of miles, depending on ecological and environmental circumstances; however, for a given quantity of oil, the more localized the distribution of the spill, the greater is the mortality.

"Different oils were found to have different effects, with toxicity being most pronounced for refined distillates and physical smothering most severe with viscous crude oils or Bunker C crude oil. Refined No. 2 fuel oil was among the oils having the most toxic effects. Variations in physical environment in coastal areas were also considered in determining effects; i.e., a polluted area might experience sudden and unpredictable stresses from synergistic interactions between variable environmental factors and the oil.

"The amount of oil and the type of organism afflicted was also found to be important. For example, a single coating of fresh or weathered crude oil or its derivatives on certain bird species or on seeds of plants caused death, whereas marsh plants were killed only after several coatings. In general, emergent plant life was less likely to be affected than marine biota, unless the spill occurred in tropical waters where mangroves were present. Very low concentrations of the soluble fractions of kerosene interfered with searching behavior of a marine snail. Crude oil on the shells of oysters had no effects. The photosynthesis of marine phytoplankton was reported to be reduced by 100 ppb of No. 2 fuel oil. Mortality of some organisms has been found in all major spills for which studies have been published, with the pelagic diving

birds being the most obvious casualties. The extent of the mortality depended on local conditions and was greatest when the releases of oil were confined to inshore areas where natural marine resources were abundant. Intertidal organisms tended to be more resistant to stress than subtidal species. In one instance, where the herbivores were reduced, the intertidal plants on which they fed increased markedly. In laboratory studies where organisms were near their limits of tolerance to temperature or salinity, pollution products caused a much greater change in metabolic rates than when the physical conditions were nearer optimum.

"The recovery of polluted areas varies greatly, depending on the flushing of the polluted area, the type of the sediments on the substrata, and the degree of isolation of its ecosystems and the kinds of organism that form them. The time periods for recovery may vary from a few months to several years. In general, the initial stages of recovery are characterized by opportunistic species that are often very productive, with a much longer time required to restore the community to one that supports more long-lived species.

"One characteristic of organisms composing an ecological community that may affect its stability and rate of recovery is, for example, a slow rate of reproduction or growth. Such a characteristic increases the vulnerability of a species or ecological community to damage from oil or any other pollution. Some marine birds (auks and penguins, particularly) have very slow reproductive rates, usually only one egg per year. With the normally low rate of mortality it takes about 50 years for the population to double; thus, even if oilings were widely spaced in time, they would be chronic catastrophes to auks. Such animals might never recover from a series of spills.

"Marshes or estuaries, well-isolated from each other, as they are on steep coastlines such as the West Coast of the United States, provide a measure of the effects of isolation. Certain common species that live only in brackish regions of estuaries have plankton larvae. If these drifted passively in the current, they would be washed out into the open sea and lost; instead, they dive deeper after drifting toward the mouth of the estuary and are carried by the deeper currents back up to where they were spawned in the brackish regions (Bousfield, personal communication). Thus, if the estuary is an isolated one, almost all the recruitment of these organisms is from the offspring of the resident population. If this population were completely destroyed by pollution, recolonization by chance immigration from a distant estuary would probably take a very long time. The resident population

of estuaries provides shelter and food for the young stages of many commercially important marine organisms (shrimp, fish, etc.).

"Partly because of their isolation, the ecological communities of coastal marshes and estuaries are particularly vulnerable to the activities associated with petroleum exploration and production. The dredging to install rigs and pipelines may severely alter an estuary, and changes in the hydrology that bring about a greater incursion of higher salinity water may have severe effects on the aquatic life attuned to a given amount of salinity. For example, the increase in salinity may greatly decrease the yield of oysters per acre. In Louisiana the overall yield of oysters and shrimp has not changed much, but dredging, channelization, and other activities have so altered the marshes that the oyster industry has been forced to move into less favorable habitats, with a consequent decline in the yield per hectare [*sic*] since 1945. At the same time, the species composition of the shrimp catch has changed: The white shrimp declined from 96 to 50 percent of the catch, while brown shrimp increased to about 50 percent. Such changes in shrimp species are often associated with changes in the salinity of the water.

"There is very little data on the effect of oil on pelagic species. Without more research, it is clearly premature to conclude anything about the effects of oil on the open ocean.

"Conclusions regarding the effects of oil in the marine environment on human health are based on limited information. From our interpretation of this information, modest concern rather than alarm appears to be justified. Although it is known that petroleum contains small amounts of carcinogens and possibly small amounts of other harmful materials, the amounts of carcinogens known to be in petroleum that could be ingested by eating marine organisms is estimated to be no greater than that acquired from eating any other foods. Nonetheless, to reduce potentially harmful effects to man, all sources of carcinogens, including the large source from terrestrial activities, should be investigated and, if possible, eliminated.

"The field of carcinogens and man's exposure to them needs more research. As part of this research, more studies should be performed to determine how these materials enter the ocean and, subsequently, man. Studies to detect whether there are other materials in petroleum in small quantities, such as mutagens or teratogens, are also needed because such enormous amounts of petroleum are used and handled by man. At present, the admittedly very inadequate available

evidence does not make it appear that dangers of this sort from petroleum in the sea are nearly as great as other exposures to man of carcinogenic and toxic materials."

110. Known tanker collisions and other casualties in Puget Sound during the period 1941 to 1973 are set forth in Exhibit O.

111. Known oil spills in Puget Sound since 1971 are set forth in Exhibit P.

112. Although tankers of the same deadweight tonnage vary substantially in dimensions and operating characteristics, the following table sets forth designs used by the United States at the 1973 International Conference on Marine Pollution:

Deadweight (DWT)	21,000	75,000	120,000	190,000	250,000
Displacement	26,700	90,700	145,300	220,500	286,600
Length	528'	763'	850'	1,000'	1,085'
Breadth	77'	125'	138'	155'	170'
Depth	40'	54'	68'	82'	84'
Draft	31'	41'	52'	61'	65'
Maximum Ahead Horsepower ⁸	7,200	19,000	26,000	30,000	32,000
Number of Separate Cargo Tanks	18	14	13	13	18
Volume of Single Typical Center Tank ⁹	1,800m ³	7,500m ³	14,000m ³	17,000m ³	30,000m ³
Volume of Single Typical Wing Tank	900m ³	4,700m ³	8,700m ³	10,500m ³	15,000m ³
Horsepower to Displacement Ratio	0.27	0.21	0.18	0.135	0.11
Stopping Distance, 16 Knots	6,000'	10,500'	13,000'	17,000'	20,000'
Stopping Distance, 8 Knots	1,500'	2,500'	3,000'	3,600'	4,000'

⁸Astern horsepower (maximum) ranges 30% to 40% of the maximum ahead horsepower.

⁹One cubic meter equals approximately 6.3 barrels.

¹⁰This term refers to unexpected or undesired events such as breakdowns, collisions, groundings, fire and explosions. A collision between two tankers is reported here as two accidents.

113. The amount of oil discharged as a result of a tanker accident which results in a spill may vary widely, e.g., from tens or hundreds of gallons to thousands of tons. In the year immediately preceding enactment of H.B. 527 in May 1975, three tanker polluting incidents of major proportion occurred worldwide: in August, 1974, the 206,000 DWT *Metula* ran aground in the Strait of Magellan, resulting in a loss of approximately 50,000 tons of oil; in January, 1975, the 237,000 DWT *Showa Maru* struck a reef in the Strait of Malacca, spilling approximately 4,500 tons of oil; and in January, 1975, the 88,000 DWT *Jakob Maersk* ran aground off Oporto, Portugal, and lost its entire cargo, either by spillage into the ocean or fire.

114. The following table summarizes tanker accidents¹⁰ and resulting spills involving all tankers in excess of 3,000 DWT, both worldwide and within the United States, for the past five years. The U.S. Coast Guard reports that tanker accidents contribute 200,000 tons per year of oil (petroleum in any form) input to the oceans worldwide. The Coast Guard also reports that tanker accidents within 50 miles of the U.S. coast have been estimated to contribute spillage of over 12,000 tons per year during the past five years.

WORLD WIDE ACCIDENTS
1969-73

	All Tankers Greater Than 3,000 DWT	Tankers 40,000 To 120,000 DWT	Tankers Greater Than 120,000 DWT
Total number of accidents:	3,183	1,341	161
Total number of accidents causing pollution;	452	164	29
Total oil spilled in these accidents (tons):	951,317	404,992	158,403

Accidents in U.S. Waters within
50 Miles of Shore
1969-73

Total number of accidents:	1,106	N.A.	N.A.
Total number of accidents causing pollution:	91	N.A.	N.A.
Total oil spilled in these accidents (tons):	63,147	N.A.	N.A.

The U.S. Coast Guard studies of worldwide tanker accidents for 1969-73 show little change in annual averages. Historically, a few major accidents each year have been the principal contributors to oil outflow.

115. Oil enters the marine environment from many different sources. Although the rate at which crude petroleum and its by-products are actually entering the ocean is impossible to determine with complete accuracy, the following table shows major sources and estimated amounts of petroleum hydrocarbons entering the world's oceans annually:

Source	Best Estimate (Metric Tons Per Year)
Natural seeps	600,000
Offshore production	80,000
Transportation:	
LOT ¹¹ tankers	310,000
Non-LOT tankers	770,000
Drydocking	250,000
Terminal operations	3,000

¹¹LOT (Load on Top) refers to a method of ballasting and tank washing whereby oily water left in tanks is not pumped directly overboard, but instead is diverted to slop tanks where it is held while the oil and water are separated by gravity. The water is pumped overboard, leaving the oil in the slop tank. New cargo oil is loaded on top of this retained oil.

Bilge/bunkering ¹²	500,000
Tanker accidents	200,000
Nontanker accidents	100,000
Coastal refineries	200,000
Atmosphere	600,000
Coastal municipal waste	300,000
Coastal nonrefining, industrial wastes	300,000
Urban runoff	300,000
River runoff	1,600,000
Total	6,113,000

116. There are some private and public cleanup materials and equipment in or accessible to the Puget Sound area in the event of an oil spill.

117. The success and the cost of oil spill cleanup efforts depends on a number of variables as referred to in paragraph 108(c) *supra*. The average cost per gallon for oil spill cleanup operations in Puget Sound has been estimated by the Washington Department of Ecology, as follows:

Size of Spill (Gallons)	Average Cleanup Cost Per Gallon	Number of Spills From Which Average is Obtained
0—100	\$19.36	6
100—1000	5.26	3
1000—10000	3.67	5

¹²Bilge/bunkering refers to discharges at regular intervals of oily wastewater which collects in the inner bottom of the ship (the bilges) and discharges which occur during refueling operations.

There has been one spill in Puget Sound of approximately 20,000 gallons. The cleanup cost for this spill was in excess of \$50,000. It is not known whether oil spills of about 20,000 gallons and greater in Puget Sound can be cleaned up with existing capabilities without significant damage to public and private property first taking place.

118. For the express purpose of directly protecting and enhancing the water quality of Puget Sound and its tributaries, including Lake Washington, the federal, state and local governments have expended at least \$503 million on municipal wastewater treatment facilities since 1956. In addition, private corporations have expended at least \$52 million for facilities at pulp and paper mills to improve the quality of direct discharges into Puget Sound. Effluents from municipal and industrial wastewater treatment plants and dredged materials are the three major authorized sources of wastes currently discharged into Puget Sound. The Washington Department of Ecology has estimated that the total flow of all discharges from all authorized sources is 665 million gallons per day.

119. Experts differ and there is good faith dispute as to whether the movement of oil by a smaller number of tankers in excess of 125,000 DWT in Puget Sound poses an increased risk of oil spillage compared to the risk from movement of a similar amount of oil by a larger number of smaller tankers in Puget Sound.

120. Experts differ and there is good faith dispute as to whether use of a tugboat escort with aggregate shaft horsepower equal to 5 percent of the DWT of the tanker reduces the likelihood of spills in Puget Sound.

121. Experts differ and there is good faith dispute as to the efficacy in preventing oil spills of (a) minimum shaft horsepower of one h.p. for each 2½ DWT; (b) twin screws; (c) double bottoms underneath all oil and liquid cargo spaces; (d) two radars, one of which must be collision-avoidance radar.

III. NONEXCLUSIVE LIST OF STATUTES, REGULATIONS AND INTERNATIONAL AGREEMENTS

FEDERAL STATUTES AND REGULATIONS

122. The primary federal statute on which Plaintiffs base their preemption contentions is the Ports and Waterways Safety Act of 1972, Pub. L. No. 92-340, 86 Stat. 424 (July 10, 1972) ("PWSA"), codified at 33 U.S.C. §§ 1221 *et seq.* and 46 U.S.C. § 391a. A true copy of the Act is annexed to the complaint as Appendix II and filed herewith as Exhibit Q.

123. The Secretary of Transportation had delegated his rulemaking authority under the PWSA to the Commandant of the Coast Guard. 49 C.F.R. § 1.46(n)(4) (1975).

124. In the exercise of its authority under Title I of the PWSA, the Coast Guard has promulgated certain regulations governing the powers of the Captains of Port and District Commanders. 40 Fed. Reg. 6653 (Feb. 13, 1975), 33 C.F.R. Part 160. A true copy is filed herewith as Exhibit R.

125. In the exercise of its authority under Title I of the PWSA, the Coast Guard announced in an advance notice of proposed rulemaking, that it has under consideration additional proposed regulations. 39 Fed. Reg. 24157 (June 28, 1974). A true copy is filed herewith as Exhibit S. To date, the text of such proposed regulations has not been published.

126. In the exercise of its authority under Title I of the PWSA, the Coast Guard has promulgated regulations establishing a vessel traffic control system in Puget Sound. 39 Fed. Reg. 25430 (July 10, 1974), 33 C.F.R. Part 161, Subpart B. A true copy is filed herewith as Exhibit T.

127. In connection with such vessel traffic system, the Coast Guard has promulgated an operating manual dated September 1974. A true copy is filed herewith as Exhibit U.

128. In the exercise of its authority under Title II of the PWSA, the Coast Guard has promulgated certain regulations for protection of the marine environment with respect to design, equipment and operating requirements for tankers in interstate trade:

(a) 40 Fed. Reg. 48280 (October 14, 1975), 33 C.F.R. Part 157, a true copy of which is filed herewith as Exhibit V; and

(b) 41 Fed. Reg. 1479 (January 8, 1976), amending 33 C.F.R. Part 157, a true copy of which is filed herewith as Exhibit W.

129. The Coast Guard has published a Final Environmental Impact Statement dated August 15, 1975, with respect to such regulations. A true copy is filed herewith as Exhibit X. This document is offered for the purpose of showing the steps taken and the matters considered by the Coast Guard in the exercise of its authority under the PWSA and pursuant to the requirements of the National Environmental Policy Act of 1969, and not for the truth of the substantive conclusions stated therein.

130. Section 7(C) of Title II of the PWSA directs that regulations for protection of the marine environment with respect to design, equipment, and operating requirements for tankers engaged in foreign commerce be effective not later than January 1, 1976. The Coast Guard has announced its intention to promulgate regulations for U.S. flag vessels in foreign trade identical to those for vessels in interstate trade. 40 Fed. Reg. 48280 (October 14, 1975). To date, the Coast Guard has neither formally proposed nor promulgated regulations to implement this provision.

131. On January 21, 1976, Governor Evans wrote a letter to President Gerald R. Ford requesting that the President direct the Coast Guard and Maritime Administration to exercise their regulatory powers and require that all U.S. tankers be built with double bottoms, inert gas systems, segregated ballast systems,

collision avoidance radar, Loran-C systems and any other safety devices readily available to the industry. In addition, he suggested that any tanker designed for use where tug assistance is unavailable should be equipped with bow thrusters. A true copy of the letter is filed herewith as Exhibit Y.

131A. On March 2, 1976, Governor Evans submitted written testimony to the U.S. Senate Committee on Commerce. A true copy of this testimony is filed herewith as a part of Exhibit Y. This document is offered for the purpose of showing the position taken by Governor Evans and not for the truth of the substantive conclusions stated therein. Other witnesses at such hearings, including the Coast Guard, took positions in particular respects different from those espoused by Governor Evans.

132. Pursuant to the provisions of Title 46, Chapter 14 of the United States Code, 46 U.S.C. §§ 361-445, the Coast Guard is responsible for inspecting all "steam vessels", including tankers, to assure that they comply with applicable federal regulations. Regulations promulgated by the Coast Guard relating to vessel design, equipment, and inspection are codified generally in Title 46 of the Code of Federal Regulations.

133. Pursuant to the Tank Vessel Act, 49 Stat. 1889, 46 U.S.C. § 391a, as amended by Title II of the PWSA, the Coast Guard is responsible for inspecting tankers to assure that they comply with all federal regulations for vessel safety and protection of the marine environment, and issuing complying tankers a certificate of inspection, upon which must be endorsed a permit showing the kinds of cargo the tanker is authorized to transport. Regulations promulgated by the Coast Guard relating to tanker design, equipment and inspection are set out in Subchapter D of Title 46 of the Code of Federal Regulations. The Coast Guard recently promulgated amendments to such regulations relating to structural fire protection and gas inerting system requirements, 41 Fed. Reg. 3838 (January 25, 1976), 46 C.F.R. Parts 30, 32, 34, a true copy of which is filed herewith as Exhibit Z.

134. Several bills to amend the Tank Vessel Act to require particular design features have been introduced in the current session of Congress, including the following:

a. S. 333 which would require segregated ballast tanks and double bottoms on all tankers over 20,000 DWT carrying oil to United States ports situated on internal waters or straits;

b. H.R. 6091 which would require segregated ballast tanks, double bottoms, and if necessary, double sides on all tankers over 20,000 DWT;

c. H.R. 569 which would specify detailed tanker design and equipment standards, including segregated ballast tanks, double bottoms, additional horsepower, multiple screws, multiple rudders, and bow and stern thrusters.

A true copy of each of the bills is filed herewith as Exhibit AA.

135. Vessels of the United States are vessels documented under the laws of the United States. Documented vessels are those registered, enrolled and licensed, or licensed by the U.S. Coast Guard. 46 C.F.R. §§ 66.03-7, -9. "Enrolled and licensed vessels" are United States flag vessels in excess of 20 tons engaged exclusively in domestic trade and authorized to engage in a particular trade. "Registered vessels" are United States flag vessels entitled to engage in international trade, though such vessels may on occasion also engage in domestic trade. "Licensed vessels" are United States flag vessels authorized to engage in a particular domestic trade.

136. United States vessels must, with some exceptions, be constructed in American shipyards, owned by United States citizens or corporations, and served by an American crew. Only American built United States flag vessels may engage in the coastwise (interstate) trade.

137. Enrolled vessels must obtain a federal license in the form prescribed by 46 U.S.C. § 263.

138. Under 46 U.S.C. § 264 a registered U.S. flag vessel may be enrolled and licensed upon surrender of its registry.

139. 46 U.S.C. § 251, a true copy of which is filed herewith as Exhibit BB, grants to enrolled and licensed or licensed vessels the right to engage in domestic trade.

140. 46 U.S.C. § 221, a true copy of which is filed herewith as Exhibit CC, grants to registered vessels "the benefits and privileges appertaining to * * * vessels [of the United States]".

141. 46 U.S.C. § 364, a true copy of which is filed herewith as Exhibit DD, provides that enrolled vessels shall be under the control and direction of pilots licensed by the Coast Guard when operating within U.S. Territorial waters.

142. 46 U.S.C. § 215, a true copy of which is filed herewith as Exhibit EE, provides that a state may require state licensed pilots on registered vessels, but may not require such pilots on enrolled vessels.

143. Other federal statutes and regulations relating to vessel design, construction and required equipment; vessel safety; and control of tanker-related oil pollution include the following:

a. The Oil Pollution Act of 1961, as amended, 33 U.S.C. §§ 1001 *et seq.*, implements the International Convention for the Prevention of the Pollution of the Sea by Oil, 1954, as amended in 1962, by establishing, *inter alia*, certain restrictions on the discharge of oil. Regulations pursuant to the Oil Pollution Act are found in 33 C.F.R. Part 151.

b. The Oil Pollution Act Amendments of 1973, Pub. L. No. 93-119, 87 Stat. 424, amended the Oil Pollution Act of 1961, to add 33 U.S.C. § 1004a. Section 1004a requires that all tankers built after specified dates must comply with the standards of the 1971 Amendments to the International Convention for the Prevention of the Pollution of the Sea by Oil, 1954, with respect to cargo tank arrangement and size. These standards are set out in Coast Guard interpretative

rules, 33 C.F.R. § 151.50. Section 1004a is effective, as to U.S. flag tankers, upon ratification of the Amendments to the Convention by the United States, 33 U.S.C. § 1016(a), or, as to foreign flag tankers, upon entry into force of the Amendments, 33 U.S.C. § 1016(c), neither of which has yet occurred. The Coast Guard has incorporated these standards into its regulations for tankers in interstate trade referred to in paragraph 128 *supra*.

c. The Vessel Bridge-to-Bridge Radiotelephone Act, Pub. L. No. 92-63, 85 Stat. 164, 33 U.S.C. §§ 1201 *et seq.*, and regulations adopted pursuant thereto, 33 C.F.R. Part 26, require every vessel over 300 gross tons to have radiotelephone equipment on its bridge.

d. The International Voyage Load Line Act of 1973, Pub. L. No. 93-115, 87 Stat. 418, 46 U.S.C. §§ 86 *et seq.*, implements the provisions of the International Convention on Load Lines, 1966, by authorizing the Coast Guard to prescribe and enforce load limits for vessels engaged in international voyages. The Coastwise Load Line Act, as amended, 46 U.S.C. §§ 88 *et seq.*, gives the Coast Guard similar authority with respect to vessels engaged in coastwise voyages. Coast Guard regulations implementing these Acts are set forth in Subchapter E of Title 46 of the Code of Federal Regulations.

e. The Merchant Marine Act of 1970, Pub. L. No. 91-469, 84 Stat. 1018, amended the Merchant Marine Act of 1936, 46 U.S.C. §§ 1101 *et seq.*, to extend application of the federal ship construction and operating subsidy programs to bulk cargo carriers, including tankers. Pursuant to this Act, the Maritime Administration has promulgated regulations and orders setting out design and construction standards for oil tankers as part of its Standard Specifications for Merchant Ship Construction.

f. The International Regulations for Preventing Collisions at Sea, Pub. L. No. 88-131, 77 Stat. 194, 33 U.S.C. §§ 1051 *et seq.*, implement the international convention establishing certain standards for lights, sound signals, steering rules and maneuvering requirements for vessels on the high seas. Similar navigation rules for rivers, harbors and other inland waters of the United States are prescribed by 33 U.S.C. §§ 151 *et seq.* and by Coast Guard regulations set forth in Title 33 of the Code of Federal Regulations.

g. Section 311 of the Federal Water Pollution Control Act Amendments of 1972, Pub. L. No. 92-500, 86 Stat. 816, 33 U.S.C. § 1251 *et seq.*, authorizes, *inter alia*, federal regulations which specify procedures, methods, equipment and other requirements to prevent and contain the discharge of oil from vessels, onshore facilities and offshore facilities, and which govern the inspection of tankers in order to reduce the likelihood of discharges in violation of the Section. § 311(j), 33 U.S.C. § 1321(j). Regulations under § 311(j) appear in 33 C.F.R. Parts 154-156. Section 311(o), 33 U.S.C. § 1321(o), provides that § 311 does not preempt any state from imposing any requirement or liability with respect to the discharge of oil into its waters and that § 311 does not affect any state law not in conflict with the Section.

h. The intervention on the High Seas Act, Pub. L. No. 93-248, 88 Stat. 8, 33 U.S.C. §§ 1471 *et seq.*, implements the International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties, by authorizing the Coast Guard to take necessary action to protect the United States against oil pollution or the threat of oil pollution resulting from a casualty on the high seas outside its territorial waters.

144. Section 8 of the Merchant Marine Act of 1920, 46 U.S.C. § 867, provides that the Maritime Administration is responsible for the promotion of efficiency and lower costs in transportation of commodities in U.S. foreign commerce, including the importation of oil.

145. The Rivers and Harbors Act, 33 U.S.C. § 407, provides that the creation of any unauthorized obstruction to the navigable capacity of U.S. waters is prohibited. A true copy of the section is filed herewith as Exhibit FF.

146. The Coastal Zone Management Act of 1972, Pub. L. No. 92-583, 86 Stat. 1280, establishes a program of federal grants to coastal states to develop coastal zone management programs. Pursuant to this program the State of Washington has submitted a coastal zone management program which is awaiting action by the Secretary of Commerce.

147. The Deepwater Port Act of 1974, Pub. L. No. 93-627, 88 Stat. 2126, 33 U.S.C. §§ 1501 *et seq.*, authorizes the Coast Guard to issue licenses for the construction and operation of deepwater offshore oil terminals beyond the territorial limits of the United States.

148. Several bills intended to regulate liability for oil pollution damage have been introduced in the current session of Congress, including S. 1754, H.R. 9294, and H.R. 10756, which would establish a comprehensive oil pollution liability and compensation scheme. True copies of these bills are filed herewith as Exhibit GG.

INTERNATIONAL AGREEMENTS

149. The convention on the Inter-Governmental Maritime Consultative Organization, adopted by the United Nations Maritime Conference held in Geneva in 1948, came into force in March, 1958. 9 U.S.T. 621, T.I.A.S. 4044, 289 U.N.T.S. 48. It created the Inter-Governmental Maritime Consultative Organization ("IMCO"), an agency of the United Nations with responsibilities in the maritime field. Membership in IMCO is open to all members of the United Nations. As of the end of 1975, there were 92 full Members of IMCO. The United States is a Member of IMCO, as are all other major maritime nations. IMCO has served as a forum for the development of international standards in the fields of vessel safety and pollution prevention, including the negotiation and adoption of many of the international agreements referred to in paragraph 150.

150. The following are international conventions relating to vessel safety and pollution prevention:

a. International Convention for the Safety of Life at Sea, 1960, 16 U.S.T. 185, T.I.A.S. 5780, 536 U.N.T.S. 27 ("SOLAS"). SOLAS contains numerous provisions designed

to insure the safety of human life on all types of vessels engaged in international voyages, including oil tankers. These provisions include vessel design and equipment requirements. SOLAS also provides for periodic inspection and certification of ships by their nation of registry. SOLAS was ratified by the United States in 1962 and entered into force in 1965. A true copy is filed herewith as Exhibit HH.

b. International Convention on Load Lines, 1966, 18 U.S.T. 1857, T.I.A.S. 6331, 640 U.N.T.S. 133. This Convention establishes load limits for vessels engaged in international voyages by prescribing the maximum draft to which the ship is permitted to be loaded. The Convention was ratified by the United States in 1966, and entered into force in 1968. A true copy is filed herewith as Exhibit II.

c. International Regulations for Preventing Collisions at Sea, 1960, 16 U.S.T. 794, T.I.A.S. 5813, revised in 1972. These regulations establish certain standards for lights, sound signals, steering rules, and maneuvering requirements for vessels on the high seas. The regulations have been in force since 1965. A true copy is filed herewith as Exhibit JJ.

d. International Convention for the Prevention of Pollution of the Sea by Oil, 1954, 12 U.S.T. 2989, T.I.A.S. 4900, 327 U.N.T.S. 3, as amended, 17 U.S.T. 1523, T.I.A.S. 6109, 600 U.N.T.S. 332. This Convention was ratified by the United States in 1961 and has been in force for the United States since that year. The 1962 Amendments were ratified by the United States and entered into force in 1967. The principal provision of the Convention, as amended, proscribes discharge of oil from vessels into the sea within fifty miles of land. Further amendments to the Convention were adopted by IMCO Conferences in 1969 and 1971, and to date only the 1969 amendments have been ratified by the United States and neither set of amendments has entered into force. The 1969 amendments establish more stringent oil discharge criteria. The 1971 amendments establish standards for cargo tank arrangement and size. A true copy of the Convention as amended in 1962 is filed herewith as Exhibit KK. True copies of the 1969 and 1971 amendments are filed herewith as Exhibits LL and MM respectively.

e. International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties, 1969, — U.S.T. —, T.I.A.S. 8068, — U.N.T.S. —. This Convention establishes the right of a coastal nation to take

necessary action to protect itself against oil pollution or the threat of oil pollution resulting from a casualty on the high seas outside its territorial waters. The Convention was ratified by the United States in 1971 and entered into force in 1975. A true copy is filed herewith as Exhibit NN.

f. International Convention on Civil Liability for Oil Pollution Damage, 1969, _____ U.N.T.S. ____ This Convention imposes upon owners of ships transporting oil strict, but limited, liability for oil pollution damage. The Convention entered into force in 1975, but to date it has not been ratified by the United States. A true copy is filed herewith as Exhibit OO.

g. Three other conventions dealing with protection from oil pollution or compensation in the event of oil pollution have been adopted by conferences convened by IMCO, but have to date neither been ratified by the United States nor entered into force:

(i). International Convention for the Prevention of Pollution from Ships, 1973, opened for signature at London, November 2, 1973. The Convention incorporates the provisions of and, if it comes into force, will supersede, as between parties, the International Convention for the Prevention of Pollution of the Sea by Oil, 1954, including the 1971 Amendments thereto relating to cargo tank arrangement and size. The Convention also contains certain additional tanker design and construction requirements for the purpose of preventing oil pollution. The Convention further provides for periodic inspection and certification of tankers by their nation of registry. A true copy is filed herewith as Exhibit PP.

(ii). The Protocol Relating to Intervention on the High Seas in Cases of Marine Pollution By Substances Other Than Oil, 1973, opened for signature at London, November 2, 1973. This Protocol would extend the provisions of the International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties to hazardous substances other than crude or heavy oils (e.g., light refined oil products). A true copy is filed herewith as Exhibit QQ.

(iii). International Convention on the Establishment of an International Fund for Compensation for Oil

Pollution Damage, 1971, opened for signature at Brussels, December 18, 1971. This Convention would establish a fund to insure adequate compensation for pollution damage above the limitation specified in the 1969 Civil Liability Convention. A true copy is filed herewith as Exhibit RR.

151. No treaty, convention, or agreement described in paragraph 150 *supra* contains any provision which by its terms prohibits or would prohibit the United States from prescribing additional, more stringent standards for any vessel entering its ports or territorial waters.

152. Various treaties and international agreements define the international boundary line between the United States and Canada. These international agreements establish a boundary line running westward along the forty-ninth parallel to the middle of the channel which separates Vancouver Island from the mainland, and then southerly through the middle of Haro Strait and then westerly through the middle of the Strait of Juan de Fuca to the Pacific Ocean. Treaty Relating to Boundary Waters between the United States and Canada, 36 Stat. 2448, signed at Washington, January 11, 1909; proclaimed May 13, 1910. Treaty concerning the Canadian International Boundary, 35 Stat. 2003, signed at Washington April 11, 1908; proclaimed June 4, 1908. Treaty with Great Britain [in regard to the Canadian boundary] Westward of the Rocky Mountains, 9 Stat. 869, signed at Washington June 15, 1846, entered into force July 17, 1846. Protocol of a Conference Respecting the Northwest Water Boundary, 18 Stat. (pt. 2, Public Treaties) 369, signed at Washington March 10, 1873; entered into force March 10, 1873.

STATE AND LOCAL STATUTES AND REGULATIONS

153. Other states and political subdivisions have under consideration or have passed laws or promulgated regulations which purported to control various aspects of the design, navigation and operation of oil tankers. Such laws and regulations include the following:

a. The Alaska Ports, Harbors and Navigable Waterways Act, Senate Bill No. 405, now pending in the Alaska Legislature. Section 30.20.240 of this Act would require any oil tanker, whether enrolled or registered, of 40,000 DWT or more to employ a state-licensed pilot in Alaska waters. It would also require any oil tanker over 40,000 DWT to have while navigating in Alaska waters the assistance of tugboats with aggregate horsepower of five percent of the tanker's DWT unless it had all of the following safety features: horsepower in the ratio of one horsepower to each 2.5 DWT; lateral bow thrusters; double bottoms; segregated ballast; midship warning lights; double boilers or an auxiliary power source; docking-collision avoidance systems; two radars; and such other navigational systems as may be prescribed by the Alaska State Port Commission. The Act would not require twin screws. A true copy of the bill is filed herewith as Exhibit SS.

EXHIBIT A

UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF WASHINGTON
THREE JUDGE COURT

CHAPTER 125

[Substitute House Bill No. 527]
OIL TANKER TRANSPORTATION ON PUGET
SOUND AND ADJACENT WATERS

AN ACT Relating to water pollution from petroleum spills; and adding new sections to chapter 88.16 RCW.

Be it enacted by the Legislature of the State of Washington:

NEW SECTION. Section 1. There is added to chapter 88.16 RCW a new section to read as follows:

Because of the danger of spills, the legislature finds that the transportation of crude oil and refined petroleum products by tankers on Puget Sound and adjacent waters creates a great potential hazard to important natural resources of the state and to jobs and incomes dependent on these resources.

The legislature also recognizes Puget Sound and adjacent waters are a relatively confined salt water environment with irregular shorelines and therefore there is a greater than usual likelihood of long-term damage from any large oil spill.

The legislature further recognizes that certain areas of Puget Sound and adjacent waters have limited space for maneuvering a large oil tanker and that these waters contain many natural navigational obstacles as well as a high density of commercial and pleasure boat traffic.

For these reasons, it is important that large oil tankers be piloted by highly skilled persons who are familiar with local waters and that such tankers have sufficient capability for rapid maneuvering responses.

It is therefore the intent and purpose of sections 2 and 3 of this 1975 act to decrease the likelihood of oil spills on Puget Sound and its shorelines by requiring all oil tankers above a certain size to employ Washington state licensed pilots and, if lacking certain safety and maneuvering capability requirements, to be escorted by a tug or tugs while navigating on certain areas of Puget Sound and adjacent waters.

NEW SECTION. Sec. 2. There is added to chapter 88.16 RCW a new section to read as follows:

Notwithstanding the provisions of RCW 88.16.070, any oil tanker, whether enrolled or registered, of fifty thousand deadweight tons or greater, shall be required to take a Washington state licensed pilot while navigating Puget Sound and adjacent waters and shall be liable for and pay pilotage rates pursuant to RCW 88.16.030 as now or hereafter amended.

NEW SECTION. Sec. 3. There is added to chapter 88.16 RCW a new section to read as follows:

(1) Any oil tanker, whether enrolled or registered, of greater than one hundred and twenty-five thousand deadweight tons shall be prohibited from proceeding beyond a point east of a line extending from Discovery Island light south to New Dungeness light.

(2) An oil tanker, whether enrolled or registered, of forty to one hundred and twenty-five thousand deadweight tons may proceed beyond the points enumerated in subsection (1) if such tanker possesses all of the following standard safety features:

(a) Shaft horsepower in the ratio of one horsepower to each two and one-half deadweight tons; and

(b) Twin screws; and

(c) Double bottoms, underneath all oil and liquid cargo compartments; and

(d) Two radars in working order and operating, one of which must be collision avoidance radar; and

(e) Such other navigational position location systems as may be prescribed from time to time by the board of pilotage commissioners:

PROVIDED, That, if such forty to one hundred and twenty-five thousand deadweight ton tanker is in ballast or is under escort of a tug or tugs with an aggregate shaft horsepower equivalent to five percent of the deadweight tons of that tanker, subsection (2) of this section shall not apply: **PROVIDED FURTHER,** That additional tug shaft horsepower equivalencies may be required under certain conditions as established by rule and regulation of the Washington utilities and transportation commission pursuant to chapter 34.04 RCW: **PROVIDED FURTHER,** That a tanker of less than forty thousand deadweight tons is not subject to the provisions of this act.

***NEW SECTION.** Sec. 4. There is added to chapter 88.16 RCW a new section to read as follows:

The Washington utilities and transportation commission is authorized to make rules and regulations necessary to implement the provisions of this act.

***Sec. 4. was vetoed, see message at end of chapter.**

NEW SECTION. Sec. 5. The House and Senate Transportation and Utilities Committees are authorized and directed to study the feasibility, benefits, and disadvantages of requiring similar pilot and tug assistance for vessels carrying other potentially hazardous materials and to submit their findings and recommendations prior to the 45th session of the Washington legislature in January, 1977. Such study shall also include a report on the feasibility, benefits and disadvantages of requiring vessels under tug escort to observe a speed limit, and such study shall include a discussion of the impact of a speed limit on the maneuverability of the vessel, the effectiveness of the tug escort and other legal and technical considerations material and relevant

to the required study. Such study shall also include an evaluation and recommendations as to whether there should be a transfer of all duties and responsibilities of the board of pilotage commissioners to the Washington utilities and transportation commission or other state agency, and alternate methods for establishing fair and equitable rates for tug escort and pilot transfer.

NEW SECTION. Sec. 6. If any provision of this act, or its application to any person or circumstance is held invalid, the remainder of the act, or the application of the provision to other persons or circumstances is not affected.

**NEW SECTION.* Sec. 7. The provisions of this 1975 act shall expire on June 30, 1978.

**Sec. 7. was vetoed, see message at end of chapter.*

Passed the House May 21, 1975.

Passed the Senate May 9, 1975.

Approved by the Governor May 29, 1975, with the exception of sections 4 and 7 which are vetoed.

Filed in Office of Secretary of State May 29, 1975.

Note: Governor's explanation of partial veto is as follows:

"I am returning herewith without my approval as to two sections Substitute House Bill No. 527 entitled:

"AN ACT Relating to water pollution from petroleum spills."

This bill provides, among other things, safety standards for oil tankers and other precautionary measures for prevention of major oil spills in Puget Sound and adjacent waters.

Section 4 of the bill authorizes the Utilities and Transportation Commission to implement the provisions of the act by rules and regulations. I am puzzled over this

delegation of major responsibility to the commission, which has had no previous experience or expertise in the area. Nor is there funding provided which might allow the commission to do a creditable job in this new field of responsibility. Elsewhere in the bill a study is authorized on the desirability of transferring the duties and responsibilities of the Board of Pilotage Commissioners to the Utilities and Transportation Commission or any other appropriate state agency. Until there are findings determined in such study which confirm the need to assign the responsibility of implementing and enforcing the provisions of this act to the commission, I am not willing to allow a situation to exist where separate agencies in state government have substantially overlapping duties in this area of increasing importance without clear direction from the Legislature.

Section 7 provides an expiration date for the act of June 30, 1978. Few would disagree that this state must soon decide and act on long range solutions to the problems created by the transportation of oil in massive quantities in Puget Sound waters. By passing this bill, the Legislature has decided that at least in the near future, oil tankers exceeding 125,000 deadweight tons should not be permitted to enter these waters. The study provided in section 5 may well offer some additional alternatives. The expiration date, however, rather than encouraging all parties to develop sound long range solutions, would instead discourage such efforts. This state could, conceivably, find itself in the second half of 1978 faced with unprecedented supertanker traffic in Puget Sound waters with all the attendant hazards but without any capability to prevent or reduce the risk of oil spills likely to produce catastrophic and permanent damage to the unique environment of the area. The expiration date would also leave the oil industry and others affected in an untenable state of uncertainty over permissible and impermissible activities in the transportation of oil into this area. Neither public nor private interests would be benefited by such uncertainty.

For the foregoing reasons, I have determined to veto sections 4 and 7 of the bill. With the exception of those sections, the remainder of the bill is approved."

EXHIBIT B

**UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF WASHINGTON
THREE JUDGE COURT**

(Letterhead omitted in printing.)

August 11, 1975

TO: All Pilots Licensed by the State of Washington
All Steamship Operators or Agents Registered with
the Board of Pilotage Commissioners
All Other Interested Parties

FROM: State of Washington
Department of Labor and Industries

SUBJECT: Order Implementing New Requirements for Oil
Tankers on Puget Sound Waters in Accordance
with SHB 527

On September 8, 1975, the Board of Pilotage Commissioners will begin enforcing several new requirements relating to oil tankers on Puget Sound waters. These requirements were added to the Washington State Pilotage Act by the recent passage of SHB 527 by the Legislature. A copy of SHB 527, as partially vetoed and signed by the Governor is enclosed.

The following paragraphs summarize the new requirements as they will be administered by the Board of Pilotage Commissioners:

NOTE: The term "deadweight tons" (DWT) is defined as the cargo carrying capacity of a vessel, to include necessary fuel oils, stores, and potable water, as expressed in long tons (2,240 pounds equals one long ton).

A. Any enrolled oil tanker of 50,000 DWT or greater and every registered oil tanker regardless of cargo carrying capacity shall have on board a Washington State licensed pilot while navigating Puget Sound and adjacent inland waters.

B. Any oil tanker, enrolled or registered, greater than 125,000 DWT shall be prohibited from proceeding beyond a point east

of a line extending from the Discovery Island light southward to the New Dungeness light.

C. Any oil tanker, enrolled or registered, of 40,000 to 125,000 DWT may proceed into Puget Sound waters provided it has all of the following safety features: (1) shaft horsepower in the ratio of one horsepower to each two and one-half DWT; and (2) twin screws; and (3) double bottoms underneath all oil and liquid cargo compartments; and (4) two radars in working order and operating, one of which must be collision avoidance radar; and (5) such other navigational position location systems as may be prescribed from time to time by the Board of Pilotage Commissioners.

D. Any oil tanker, enrolled or registered, of 40,000 to 125,000 DWT which does not have all the safety features prescribed in section C above, may proceed into Puget Sound waters only if it has a tug escort with an aggregate shaft horsepower equivalent to five percent of the DWT of the oil tanker. For example, an oil tanker of 125,000 DWT would require a tug escort having 6,250 aggregate shaft horsepower, whereas an oil tanker of 40,000 DWT would require a 2,000 horsepower tug escort. (NOTE: Oil tankers of less than 40,000 DWT are not required to have either the safety features listed above or any tug escorts.)

1. Tug escorts shall begin and end at a point east of a line extending from the Discovery Island light southward to the New Dungeness light.

2. Any oil tanker of 40,000 to 125,000 DWT which is fully in ballast may move in Puget Sound waters without the safety features prescribed in Section C above and without a tug escort.

3. Any enrolled oil tanker between 40,000 and 50,000 DWT is not required to have on board a State licensed pilot, but must have either the safety features prescribed in C above or the appropriate tug escort.

E. The steamship companies or their agents shall be responsible for ordering any required tugs and for contacting the

pilot dispatch station for required pilotage services as set forth in this order. Additionally, the State licensed pilot is required to advise the master of oil tankers of such requirements. In the event of any violation of these rules that comes to the attention of the Pilot, he is required to immediately notify the appropriate authorities.

Further, the clear intent of the legislation is expressed in Section 1 in which it states in part that "the intent and purpose of the Act is to decrease the likelihood of oil spills on Puget Sound and its shorelines * * *". Accordingly, it is the Board's interpretation that all such requirements contained in SHB 527 apply to oil tankers engaged in the business of transporting petroleum products. The provisions of this Act do not apply if such vessels defined as oil tankers are engaged exclusively in transporting cargo other than petroleum products; however, it should be understood that this interpretation applies to the provisions of SHB 527 and does not remove existing requirements for any such vessels already included in the Washington State Pilotage Act.

(Signed): William C. Jacobs, Chairman
Board of Pilotage Commissioners

EXHIBIT C

UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF WASHINGTON
THREE JUDGE COURT

List of all crude oil tankers received at Atlantic Richfield's Cherry Point refinery since it commenced operations through 1975.

Date of Arrival	Name	DWT (000)	Flag
5/15/72	San Juan Voyager	131	Liberia
7/10/72	Joseph D. Potts	81	U.S.*
8/9/72	Arco Sag River	70	U.S.
10/14/72	San Juan Voyager	131	Liberia
11/10/72	Harima Maru	115	Japan
11/22/72	Arco Prudhoe Bay	70	U.S.
12/12/72	Arco Prudhoe Bay	70	U.S.
12/29/72	San Juan Voyager	131	Liberia
1/19/73	Golden Gate	62	U.S.
1/31/73	Arco Sag River	70	U.S.
3/2/73	Kinna Dan	72	Denmark
3/13/73	San Juan Voyager	131	Liberia
3/18/73	Arco Prudhoe Bay	70	U.S.
4/2/73	Arco Colombia	58	Liberia
4/23/73	Harima Maru	115	Japan
6/3/73	Toxon	63	Liberia
6/13/73	Trident	70	Liberia
7/3/73	Almizar	109	Liberia
7/19/73	Arco Prudhoe Bay	70	U.S.
8/3/73	Arco Colombia	58	Liberia
8/10/73	San Juan Voyager	131	Liberia
8/28/73	Biscay Maru	100	Japan
9/8/73	Seven Stars	98	Sweden
9/18/73	Lily Prima	134	Italy
9/26/73	Eugenie	64	Liberia
10/1/73	Bjorgfjell	73	Norway
10/5/73	Slavisa Vajner	70	Yugoslavia
10/10/73	Arco Anchorage	120	U.S.

*United States abbreviated as U.S. in printing

Date Arrival	Name	DWT (000)	Flag
10/29/73	Sinclair Texas	50	U.S.
10/30/73	San Juan Venturer (now Marcona Venturer)	131	Liberia
11/14/72	Leon	65	Liberia
11/24/73	Almizar	109	Liberia
12/23/73	Almizar	109	Liberia
1/7/74	Kenai Peninsula	50	Liberia
1/20/74	Almizar	109	Liberia
2/2/74	Clementina	96	Liberia
2/16/74	San Juan Venturer (now Marcona Venturer)	131	Liberia
3/2/74	Arco Prudhoe Bay	70	U.S.
3/5/74	Spyros	64	Liberia
3/19/74	Seatiger	122	Liberia
4/5/74	Clementina	96	Liberia
4/15/74	Almizar	109	Liberia
4/29/74	Marcona Voyager (formerly San Juan Voyager)	131	Liberia
5/10/74	Arco Anchorage	120	U.S.
5/17/74	Naess Leader	45	Liberia
5/18/74	Seatiger	122	Liberia
5/20/74	Naess Leader	45	Liberia
5/23/74	Kongshav	102	Norway
6/14/74	Marcona Venturer (formerly San Juan Venturer)	131	Liberia
6/20/74	Tamano Maru	116	Japan
7/5/74	Clementina	96	Liberia
7/8/74	Arco Anchorage	120	U.S.
7/15/74	Sinclair Texas	50	U.S.
7/26/74	Jundia	116	Brazil
7/31/74	Sinclair Texas	50	U.S.
8/4/74	Seatiger	122	Liberia
8/10/74	Hakuyoh Maru	100	Japan
8/13/74	Sinclair Texas	50	U.S.
9/7/74	Arco Juneau	120	U.S.
9/16/74	Clementina	96	Liberia

Date of Arrival	Name	DWT (000)	Flag
9/28/74	Arco Anchorage	120	U.S.
10/7/74	Seatiger	122	Liberia
10/21/74	Arco Fairbanks	120	U.S.
11/5/74	Arco Juneau	120	U.S.
12/2/74	Arco Anchorage	120	U.S.
12/5/74	Arco Anchorage	120	U.S.
12/22/74	Arco Fairbanks	120	U.S.
12/23/74	Sinclair Texas	50	U.S.
1/7/75	Burmah Pearl	138	Britain
1/20/75	Arco Juneau	120	U.S.
1/31/75	Toba Maru	126	Japan
2/19/75	Arco Anchorage	120	U.S.
2/27/75	Arco Fairbanks	120	U.S.
3/17/75	Seatiger	122	Liberia
3/31/75	Arco Juneau	120	U.S.
4/10/75	Clementina	96	Liberia
4/24/75	New Star	60	Liberia
5/2/75	Arco Anchorage	120	U.S.
5/16/75	Ania	128	Liberia
5/23/75	Grand West	49	Panama
5/27/75	Burmah Pearl	138	Britain
6/7/75	Arco Juneau	120	U.S.
6/17/75	Clementina	96	Liberia
6/28/75	Shirley	128	Liberia
7/12/75	Arco Fairbanks	120	U.S.
7/30/75	Sinclair Texas	50	U.S.
8/8/75	Arco Anchorage	120	U.S.
8/11/75	Wind Endeavour	125	Norway
8/19/75	Arco Juneau	120	U.S.
8/21/75	Allegro	100	Liberia
8/25/75	Sinclair Texas	50	U.S.
9/6/75	Seatiger	122	Liberia
9/18/75	Arco Fairbanks	120	U.S.
9/21/75	Kongshav	102	Norway
9/30/75	Penny Conway	98	Liberia
10/5/75	Universe Defender	58	Liberia
10/21/75	Arco Prudhoe Bay	70	U.S.
10/21/75	Sinclair Texas	50	U.S.

Date of Arrival	Name	DWT (000)	Flag
10/24/75	Arco Anchorage	120	U.S.
10/31/75	Arco Juneau	120	U.S.
11/11/75	W. Alton Jones	103	Liberia
11/22/75	Kikuwa Maru	112	Japan
11/27/75	Jequitiba	116	Brazil
12/9/75	Clementina	96	Liberia
12/20/75	Arco Fairbanks	120	U.S.

List of deliveries of crude oil to Cherry Point by tankers of 40,000 DWT or less since it commenced operations through 1975.

Date of Arrival	Name	DWT (000)	Flag
3/19/72	David E. Day	20	U.S.
7/14/72	Atlantic Trader	20	U.S.
7/26/72	Atlantic Trader	20	U.S.
8/5/72	Atlantic Trader	20	U.S.
9/20/72	Atlantic Trader	20	U.S.
11/5/72	Atlantic Trader	20	U.S.
12/1/72	Atlantic Trader	20	U.S.
12/11/72	Atlantic Trader	20	U.S.
5/18/73	David E. Day	20	U.S.
7/29/73	David E. Day	20	U.S.

EXHIBIT D**UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF WASHINGTON
THREE JUDGE COURT**

List of crude oil tankers in excess of 125,000 DWT received at Atlantic Richfield's Cherry Point refinery since it commenced operations through September 8, 1975.

Date of Arrival	Name	DWT (000)	Flag
5/15/72	San Juan Voyager (fully loaded)	131	Liberia
10/14/72	San Juan Voyager	131	Liberia
12/29/72	San Juan Voyager	131	Liberia
3/13/73	San Juan Voyager (fully loaded)	131	Liberia
8/10/73	San Juan Voyager (fully loaded)	131	Liberia
9/18/73	Lily Prima (fully loaded)	134	Italy
10/30/73	San Juan Venturer (fully loaded)	131	Liberia
2/16/74	San Juan Venturer	131	Liberia
4/29/74	Marcona Voyager (fully loaded)	131	Liberia
6/14/74	Marcona Venturer (fully loaded)	131	Liberia
1/7/75	Burmah Pearl	138	Britain
1/31/75	Toba Maru (fully loaded)	126	Japan
5/16/75	Ania	128	Liberia
5/27/75	Burmah Pearl (fully loaded)	138	Britain
6/28/75	Shirley (fully loaded)	128	Liberia

EXHIBIT F**UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF WASHINGTON
THREE JUDGE COURT**

List of all crude oil tankers received through the Port of Long Beach for Atlantic Richfield's Carson refinery from March 1972 through 1975.

Date of Arrival	Name	DWT (000)	Flag
3/2/72	San Juan Voyager (fully loaded)	131	Liberia
5/9/72	San Juan Voyager (fully loaded)	131	Liberia
7/23/72	San Juan Voyager	131	Liberia
9/29/72	San Juan Voyager (fully loaded)	131	Liberia
12/26/72	San Juan Voyager	131	Liberia
3/18/73	San Juan Voyager (fully loaded)	131	Liberia
8/16/73	San Juan Voyager	131	Liberia
9/22/73	Lily Prima	134	Italy
11/6/73	San Juan Voyager	131	Liberia
2/6/75	Toba Maru	126	Japan
6/3/75	Mesologi	128	Greece
7/21/75	Universe Patriot	158	Liberia
8/8/75	Japan Mimosa	166	Japan
8/29/75	Nai Marcus	150	Italy
9/30/75	Skaubo (fully loaded)	129	Norway
10/7/75	Skaubo	129	Norway
10/15/75	Fairfield (fully loaded)	140	Liberia
11/28/75	Kaiko Maru	137	Japan

EXHIBIT N

UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF WASHINGTON
THREE JUDGE COURT

Federal, State, County and Local Public
Parks and Recreation Sites Located
on or Adjacent to Puget Sound

Federal (5)

Dungeness Recreational Park (Bureau of Reclamation)
Rainbow (Forest Service)
San Juan Island National Historical Park
Seal Rock — Hood Canal (Forest Service)
Washington Park, Sunset Beach (Bureau of Reclamation)

State (65)

Bay View	Fay Bainbridge	Lime Kiln Point	Shine Tidelands
Belfair	Fort Casey	Lopez Is. Tidelands	Skull Island
Birch Bay	Fort Ebey	Manchester	South Whidbey
Blake Island	Fort Flagler	Matia Island	Spencer Spit
Blind Island	Fort Ward	McMicken Island	Squaxin Island
Camano Island	Fort Worden	Moran	Stretch Point
Clark Island	Freeman Island	Mukilteo	Sucia Island
Cone Island	Harper	Mystery Bay	Toandos Tidelands
Danger Island	Harvey Rensland	Old Fort Townsend	Tolmie
Dash Point	Iceberg Island	Olga	Twanoh
Deadman's Is.	Illahee	Pateos Island	Unnamed Island
Deception Pass	James Island	Penrose Point	Useless Bay
Doe Island	Jarrell Cove	Potlatch	Victim Island
Dosewallips	Kitsap Memorial	Rock Island	Wolfe Site
Dungeness	Kopachuck	Saddlebag Island	Jones Island
Eagle Island	Larrabee	Scenic Beach	Turn Island
Everett Jetty	Lilliwaup Tidelands	Sequim Bay	Posey Island

State Department of Natural Resources (7)

Robert F. Kennedy	Obstruction Pass
Taylor Beach	Point Doughty
Smith Island	Lummi Island
Loon Island	

County (65)

Clallam:	Dungeness Recreation Area	
	Port Williams	
Island:	Admiralty Bay	Long Beach
	Baby Island Heights No. 1	Monroe's Landing
	Baby Island Heights No. 2	Moran Park
	Bayview	Mountain View Beach
	Beachcombers	Mutiny Bay No. 1
	Bonnie View Acres	Mutiny Bay No. 2
	Bush Point	Point Partridge
	Cavalero Beach	Possession
	Cornet Bay	Strawberry Point
	Dave Mackie Memorial	Sunlight
	Davis Landing	Sunset Beach
	Freeland	Tillicum Beach
	Glendale	Tyee Beach No. 1
	Greenbank	Utsalady No. 1
	Lagoon Point No. 1	Utsalady No. 2
	Lagoon Point No. 2	West Beach No. 1
	Lawana Beach	West Beach No. 2
	Ledgewood Beach	Westview
Jefferson:	Shine Park	
King:	Dockton	
	Point Robinson	
	Richmond Beach	
	Seahurst	
Kitsap:	Arness Roadside Park	Salisbury
	Harper Park	Point No Point
	Keyport	Silverdale Waterfront

Mason:	Indian Beach
	Mading Orchard Beach
	Shorecrest
	Walker Park
Pierce:	Browns Point
	Dash Point
San Juan:	American Camp
	Odlin
	San Juan
Snohomish:	Kayak Point
	Meadowdale
	Picnic Point
Thurston:	Burfoot Cove
	Fry Cove
Whatcom:	Lighthouse Marine Park
	Lummi Marina Park

City (16)

Alki Point (Seattle)	Langley City Marina
Coupeville Boat Landing	Langley Park
Coupeville Boat Launch	Oak Harbor City Park
Coupeville City Marina	Point Defiance (Tacoma)
Coupeville City Park	Port Bellingham Park
Dan Porter Memorial (Clinton)	Priest Point
Golden Gardens (Seattle)	Sunrise Beach (Langley)
Karkey Park (Seattle)	Sunset Terrace

Visitations to State Parks in Northern Puget Sound

Birch Bay	556,434
Deception Pass	1,221,631
Fort Casey	455,085
Fort Flagler	422,420
Fort Worden	597,878
Larrabee	360,702

Old Fort Townsend	115,152
Sequim Bay	767,274
Clark Island	6,745
Blind, Skull & Victim Islands	3,108
Doe Island	4,554
Stuart Island	101,238
Sucia Island	102,931
Jones Island	69,845
Matia Island	12,783
James Island	15,705
Spencer Spit	39,517
Turn Island	9,891
Patos Island	3,611
Posey Island	1,845
Saddlebag Island	10,524
Total	4,878,868

EXHIBIT O

UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF WASHINGTON
THREE JUDGE COURT

Tanker Casualties on Puget Sound

The following table lists tanker casualties occurring in Puget Sound from 1941-1973. The data is based on the best information available from the United States Coast Guard and the Canadian Ministry of Transport. Tanker casualties are included on the list if they involved tankers greater than 7,000 DWT, or more than 5,000 feet in length, or with a draft of 18 feet or more.

Tanker Name	DWT	Date	Location	Casualty Type	Principal Cause (If Known)	Amount of Oil Spilled
Coney	8,800*	9/12/43	Point Wilson	Collision	—	Unknown, if any
F.S. Bryant	12,600	9/2/69	South Sound	Ramming	Adverse Weather	Unknown, if any
Lompoc	16,600	12/23/69	South Sound	—	Equipment Failure	Unknown, if any
Meadowbrook	27,200	4/7/70	South Sound	Grounding	Pilot Error	Unknown, if any
Meadowbrook	27,200	5/7/70	Bellingham Bay	Grounding	—	Unknown, if any
Texaco California	20,000	7/27/71	North Sound	Explosion	Improper Mooring	Unknown, if any
Gaines Mill	20,700	1/11/72	North Sound	Ramming	Improper Tug Assistance	Unknown, if any
David E. Day	20,000	2/4/72	North Sound	—	Equipment Failure	Unknown, if any
David E. Day	20,000	7/4/72	North Sound	Flooding	Equipment Failure	Unknown, if any
Mobiloil	31,800	6/9/72	South Sound	Collision	—	Unknown, if any
Nevada Standard	17,300	7/23/72	Niroutas Inlet	Grounding	Navigational Error	Unknown, if any
Paul M. Gregg	12,800	—	West Point	Collision	—	Unknown, if any
Bunker Hill	16,600	3/6/64	South Rosario	Explosion	Unknown	None

* Estimate based on gross registered tons.

EXHIBIT Q

UNITED STATES DISTRICT COURT WESTERN DISTRICT OF WASHINGTON THREE JUDGE COURT

P.L. 92-340 LAWS OF 92nd Cong.—2nd SESS. July 10

PORTS AND WATERWAYS SAFETY ACT OF 1972

PUBLIC LAW 92-340; 86 STAT. 424

[H. R. 8140]

AN ACT to promote the safety of ports, harbors, waterfront areas, and navigable waters of the United States.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That:

This Act may be cited as the "Ports and Waterways Safety Act of 1972".

TITLE I—PORTS AND WATERWAYS SAFETY AND ENVIRONMENTAL QUALITY

Sec. 101. In order to prevent damage to, or the destruction or loss of any vessel, bridge, or other structure on or in the navigable waters of the United States, or any land structure or shore area immediately adjacent to those waters; and to protect the navigable waters and the resources therein from environmental harm resulting from vessel or structure damage, destruction, or loss, the Secretary of the department in which the Coast Guard is operating may—

(1) establish, operate, and maintain vessel traffic services and systems for ports, harbors, and other waters subject to congested vessel traffic;

(2) require vessels which operate in an area of a vessel traffic service or system to utilize or comply with that service or system, including the carrying or installation of electronic or other devices necessary for the use of the service or system;

(3) control vessel traffic in areas which he determines to

be especially hazardous, or under conditions of reduced visibility, adverse weather, vessel congestion, or other hazardous circumstances by—

- (i) specifying times of entry, movement, or departure to, from, within, or through ports, harbors, or other waters;
 - (ii) establishing vessel traffic routing schemes;
 - (iii) establishing vessel size and speed limitations and vessel operating conditions; and
 - (iv) restricting vessel operation, in a hazardous area or under hazardous conditions, to vessels which have particular operating characteristics and capabilities which he considers necessary for safe operation under the circumstances;
- (4) direct the anchoring, mooring, or movement of a vessel when necessary to prevent damage to or by that vessel or her cargo, stores, supplies, or fuel;
- (5) require pilots on self-propelled vessels engaged in the foreign trades in areas and under circumstances where a pilot is not otherwise required by State law to be on board until the State having jurisdiction of an area involved establishes a requirement for a pilot in that area or under the circumstances involved;
- (6) establish procedures, measures, and standards for the handling, loading, discharge, storage, stowage, and movement, including the emergency removal, control and disposition, of explosives or other dangerous articles or substances (including the substances described in section 4417a(2) (A), (B), and (C) of the Revised Statutes of the United States (46 U.S.C. 391a(2) (A), (B), and (C)) on structures subject to this title;
- (7) prescribe minimum safety equipment requirements for structures subject to this title to assure adequate protection from fire, explosion, natural disasters, and other serious accidents or casualties;
- (8) establish water or waterfront safety zones or other measures for limited, controlled, or conditional access and activity when necessary for the protection of any vessel, structure, waters, or shore area; and
- (9) establish procedures for examination to assure compliance with the minimum safety equipment requirements for structures.

Sec. 102. (a) For the purpose of this Act, the term "United States" includes the fifty States, the District of Columbia, Puerto Rico, the territories and possessions of the United States, and the Trust Territory of the Pacific Islands.

(b) Nothing contained in this title supplants or modifies any treaty or Federal statute or authority granted thereunder, nor does it prevent a State or political subdivision thereof from prescribing for structures only higher safety equipment requirements or safety standards than those which may be prescribed pursuant to this title.

(c) In the exercise of his authority under this title, the Secretary shall consult with other Federal agencies, as appropriate, in order to give due consideration to their statutory and other responsibilities, and to assure consistency of regulations applicable to vessels, structures, and areas covered by this title. The Secretary may also consider, utilize, and incorporate regulations or similar directory materials issued by port or other State and local authorities.

(d) This title shall not be applicable to the Panama Canal. The authority granted to the Secretary under section 101 of this title shall not be delegated with respect to the Saint Lawrence Seaway to any agency other than the Saint Lawrence Seaway Development Corporation. Any other authority granted the Secretary under this title shall be delegated to the Saint Lawrence Seaway Development Corporation to the extent that the Secretary determines such delegation is necessary for the proper operation of the Seaway.

(e) In carrying out his duties and responsibilities under this title to promote the safe and efficient conduct of maritime commerce the Secretary shall consider fully the wide variety of interests which may be affected by the exercise of his authority hereunder. In determining the need for, and the substance of, any rule or regulation or the exercise of other authority hereunder the Secretary shall, among other things, consider—

- (1) the scope and degree of the hazards;
- (2) vessel traffic characteristics including minimum interference with the flow of commercial traffic, traffic volume, the sizes and types of vessels, the usual nature of local cargoes, and similar factors;
- (3) port and waterway configurations and the differences in geographic, climatic, and other conditions and circumstances;

- (4) environmental factors;
- (5) economic impact and effects;
- (6) existing vessel traffic control systems, services, and schemes; and
- (7) local practices and customs, including voluntary arrangements and agreements within the maritime community

Sec. 103. The Secretary may investigate any incident, accident, or act involving the loss or destruction of, or damage to, any structure subject to this title, or which affects or may affect the safety or environmental quality of the ports, harbors, or navigable waters of the United States. In any investigation under this title, the Secretary may issue a subpoena to require the attendance of any witness and the production of documents and other evidence. In case of refusal to obey a subpoena issued to any person, the Secretary may request the Attorney General to invoke the aid of the appropriate district court of the United States to compel compliance. Witnesses may be paid fees for travel and attendance at rates not exceeding those allowed in a district court of the United States.

Sec. 104. The Secretary may issue reasonable rules, regulations, and standards necessary to implement this title. In the exercise of his rulemaking authority the Secretary is subject to the provisions of chapters 5 and 7 of title 5, United States Code. In preparing proposed rules, regulations, and standards, the Secretary shall provide an adequate opportunity for consultation and comment to State and local governments, representatives of the marine industry, port and harbor authorities, environmental groups, and other interested parties.

Sec. 105. The Secretary shall, within one year after the effective date of this Act, report to the Congress his recommendations for legislation which may be necessary to achieve coordination and/or eliminate duplication between the functions authorized by this Act and the functions of any other agencies.

Sec. 106. Whoever violates a regulation issued under this title shall be liable to a civil penalty of not more than \$10,000. The

Secretary may assess and collect any civil penalty incurred under this title and, in his discretion, remit, mitigate, or compromise any penalty. Upon failure to collect or compromise a penalty, the Secretary may request the Attorney General to commence an action for collection in any district court of the United States. A vessel used or employed in a violation of a regulation under this title shall be liable in rem and may be proceeded against in any district court of the United States having jurisdiction.

Sec. 107. Whoever willfully violates a regulation issued under this title shall be fined not less than \$5,000 or more than \$50,000 or imprisoned for not more than five years, or both.

TITLE II—VESSELS CARRYING CERTAIN CARGOES IN BULK

Sec. 201. Section 4417a of the Revised Statutes of the United States (46 U.S.C. 391a)⁵ is hereby amended to read as follows:

"Sec. 4417a. (1) Statement of Policy.—The Congress hereby finds and declares—

"That the carriage by vessels of certain cargoes in bulk creates substantial hazards to life, property, the navigable waters of the United States (including the quality thereof) and the resources contained therein and of the adjoining land, including but not limited to fish, shellfish, and wildlife, marine and coastal ecosystems and recreational and scenic values, which waters and resources are hereafter in this section referred to as the 'marine environment'.

"That existing standards for the design, construction, alternation, repair, maintenance and operation of such vessels must be improved for the adequate protection of the marine environment.

"That it is necessary that there be established for all such vessels documented under the laws of the United States or entering the navigable waters of the United States comprehensive minimum standards of design, construction, alteration, repair, maintenance, and operation to prevent or mitigate the hazards to life, property, and the marine environment.

"(2) Vessels Included.—All vessels, regardless of tonnage size,

or manner of propulsion, and whether self-propelled or not, and whether carrying freight or passengers for hire or not, which are documented under the laws of the United States or enter the navigable waters of the United States, except public vessels other than those engaged in commercial service, that shall have on board liquid cargo in bulk which is—

“(A) inflammable or combustible, or

“(B) oil, of any kind or in any form, including but not limited to, petroleum, fuel oil, sludge, oil refuse, and oil mixed with wastes other than dredged spoil, or

“(C) designated as a hazardous polluting substance under section 12(a) of the Federal Water Pollution Control Act (33 U.S.C. 1162);

shall be considered steam vessels for the purposes of title 52 of the Revised Statutes of the United States and shall be subject to the provisions thereof: *Provided*, That this section shall not apply to vessels having on board the substances set forth in (A), (B), or (C) above only for use as fuel or stores or to vessels carrying such cargo only in drums, barrels, or other packages: *And provided further*, That nothing contained herein shall be deemed to amend or modify the provisions of section 4 of Public Law 90-397 with respect to certain vessels of not more than five hundred gross tons: *And provided further*, That this section shall not apply to vessels of not more than five hundred gross tons documented in the service of oil exploitation which are not tank vessels and which would be subject to this section only because of the transfer of fuel from the vessels' own fuel supply tanks to offshore drilling or production facilities.

⁸ 46 U.S.C.A. § 391a.

“(3) Rules and Regulations.—In order to secure effective provision (A) for vessel safety, and (B) for protection of the marine environment, the Secretary of the department in which the Coast Guard is operating (hereafter referred to in this section as the ‘Secretary’) shall establish for the vessels to which this section applies such additional rules and regulations as may be necessary with respect to the design and construction, alteration, repair, and maintenance of such vessels, including, but not limited to, the superstructures, hulls, places for stowing and carrying such cargo,

fittings, equipment, appliances, propulsive machinery, auxiliary machinery, and boilers thereof; and with respect to all materials used in such construction, alteration, or repair; and with respect to the handling and stowage of such cargo, the manner of such handling or stowage, and the machinery and appliances used in such handling and stowage; and with respect to equipment and appliances for life saving, fire protection, and the prevention and mitigation of damage to the marine environment; and with respect to the operation of such vessels; and with respect to the requirements of the manning of such vessels and the duties and qualifications of the officers and crew thereof; and with respect to the inspection of all the foregoing. In establishing such rules and regulations the Secretary may, after hearing as provided in subsection (4), adopt rules of the American Bureau of Shipping or similar American classification society for classed vessels insofar as such rules pertain to the efficiency of hulls and the reliability of machinery of vessels to which this section applies. In establishing such rules and regulations, the Secretary shall give due consideration to the kinds and grades of such cargo permitted to be on board such vessel. In establishing such rules and regulations the Secretary shall, after consultation with the Secretary of Commerce and the Administrator of the Environmental Protection Agency, identify those established for protection of the marine environment and those established for vessel safety.

“(4) Adoption of Rules and Regulations.—Before any rules or regulations, or any alteration, amendment, or repeal thereof, are approved by the Secretary under the provisions of this section, except in an emergency, the Secretary shall (A) consult with other appropriate Federal departments and agencies, and particularly with the Administrator of the Environmental Protection Agency and the Secretary of Commerce, with regard to all rules and regulations for the protection of the marine environment, (B) publish proposed rules and regulations, and (C) permit interested persons an opportunity for hearing. In prescribing rules or regulations, the Secretary shall consider, among other things, (i) the need for such rules or regulations, (ii) the extent to which such rules or regulations will contribute to safety or protection

of the marine environment, and (iii) the practicability of compliance therewith, including cost and technical feasibility.

“(5) Rules and Regulations for Safety; Inspection; Permits; Foreign Vessels.—No vessel subject to the provisions of this section shall, after the effective date of the rules and regulations for vessel safety established hereunder, have on board such cargo, until a certificate of inspection has been issued to such vessel in accordance with the provisions of title 52 of the Revised Statutes of the United States and until a permit has been endorsed on such certificate of inspection by the Secretary, indicating that such vessel is in compliance with the provisions of this section and the rules and regulations for vessel safety established hereunder, and showing the kinds and grades of such cargo that such vessel may have on board or transport. Such permit shall not be endorsed by the Secretary on such certificate of inspection until such vessel has been inspected by the Secretary and found to be in compliance with the provisions of this section and the rules and regulations for vessel safety established hereunder. For the purpose of such inspection, approved plans and certificates of class of the American Bureau of Shipping or other recognized classification society for classed vessels may be accepted as evidence of the structural efficiency of the hull and the reliability of the machinery of such classed vessels except as far as existing law places definite responsibility on the Coast Guard. A certificate issued under the provisions of this section shall be valid for a period of time not to exceed the duration of the certificate of inspection on which such permit is endorsed, and shall be subject to revocation by the Secretary whenever he shall find that the vessel concerned does not comply with the conditions upon which such permit was issued: *Provided*, That rules and regulations for vessel safety established hereunder and the provisions of this subsection shall not apply to vessels of a foreign nation having on board a valid certificate of inspection recognized under law or treaty by the United States: *And provided further*, That no permit shall be issued under the provisions of this section authorizing the presence on board any vessel of any of the materials expressly prohibited from being thereon by subsection (3) of section 4472 of this title.

“(6) Rules and Regulations for Protection of the Marine Environment; Inspection; Certification.—No vessel subject to the provisions of this section shall, after the effective date of rules and regulations for protection of the marine environment, have on board such cargo, until a certificate of compliance, or an endorsement on the certificate of inspection for domestic vessels, has been issued by the Secretary indicating that such vessel is in compliance with such rules and regulations. Such certificate of compliance or endorsement shall not be issued by the Secretary until such vessel has been inspected by the Secretary and found to be in compliance with the rules and regulations for protection of the marine environment established hereunder. A certificate of compliance or an endorsement issued under this subsection shall be valid for a period specified therein by the Secretary and shall be subject to revocation whenever the Secretary finds that the vessel concerned does not comply with the conditions upon which such certificate or endorsement was issued.

“(7) Rules and Regulations for Protection of the Marine Environment Relating to Vessel Design and Construction, Alteration, and Repair; International Agreement.—(A) The Secretary shall begin publication as soon as practicable of proposed rules and regulations setting forth minimum standards of design, construction, alteration, and repair of the vessels to which this section applies for the purpose of protecting the marine environment. Such rules and regulations shall, to the extent possible, include but not be limited to standards to improve vessel maneuvering and stopping ability and otherwise reduce the possibility of collision, grounding, or other accident, to reduce cargo loss following collision, grounding, or other accident, and to reduce damage to the marine environment by normal vessel operations such as ballasting and deballasting, cargo handling, and other activities.

“(B) The Secretary shall cause proposed rules and regulations published by him pursuant to subsection (7) (A) to be transmitted to appropriate international forums for consideration as international standards.

“(C) Rules and regulations published pursuant to subsection

(7) (A) shall be effective not earlier than January 1, 1974, unless the Secretary shall earlier establish rules and regulations consonant with international treaty, convention, or agreement, which generally address the regulation of similar topics for the protection of the marine environment. In the absence of the promulgation of such rules and regulations consonant with international treaty, convention, or agreement, the Secretary shall establish an effective date not later than January 1, 1976, for rules and regulations previously published pursuant to this subsection (7) which he then deems appropriate.

"(D) Any rule or regulation for protection of the marine environment promulgated pursuant to this subsection (7) shall be equally applicable to foreign vessels and United States-flag vessels operating in the foreign trade. If a treaty, convention, or agreement provides for reciprocity of recognition of certificates or other documents to be issued to vessels by countries party thereto, which evidence compliance with rules and regulations issued pursuant to such treaty, convention, or agreement, the Secretary, in his discretion, may accept such certificates or documents as evidence of compliance with such rules and regulations in lieu of the certificate of compliance otherwise required by subsection (6) of this section.

"(8) Shipping Documents.—Vessels subject to the provisions of this section shall have on board such shipping documents as may be prescribed by the Secretary indicating the kinds, grades, and approximate quantities of such cargo on board such vessel, the shippers and consignees thereof, and the location of the shipping and destination points.

"(9) Officers; Tankermen; Certification.—(A) In all cases where the certificate of inspection does not require at least two licensed officers, the Secretary shall enter in the permit issued to any vessel under the provisions of this section the number of the crew required to be certified as tankermen.

"(B) The Secretary shall issue to applicants certificates as tankermen, stating the kinds of cargo the holder of such certificate

be proceeded against in the United States district court for any district in which the vessel may be found.

"(12) Injunctive Proceedings.—The United States district courts shall have jurisdiction for cause shown to restrain violations of this section or the rules and regulations promulgated hereunder.

"(13) Denial of Entry.—The Secretary may, subject to recognized principles of international law, deny entry into the navigable waters of the United States to any vessel not in compliance with the provisions of this section or the regulations promulgated thereunder."

Sec. 202. Regulations previously issued under statutory provisions repealed, modified, or amended by this title shall continue in effect as though promulgated under the authority of section 4417a of the Revised Statutes of the United States (46 U.S.C. 391a), as amended by this title, until expressly abrogated, modified, or amended by the Secretary of the Department in which the Coast Guard is operating under the regulatory authority of such section 4417a as so amended. Any proceeding under such section 4417a for a violation which occurred before the effective date of this title may be initiated or continued to conclusion as though such section 4417a had not been amended hereby.

Sec. 203. The Secretary of the Department in which the Coast Guard is operating shall, for a period of ten years following the enactment of this title, make a report to the Congress at the beginning of each regular session, regarding his activities under this title. Such report shall include but not be limited to (A) a description of the rules and regulations prescribed by the Secretary (i) to improve vessel maneuvering and stopping ability and otherwise reduce the risks of collisions, groundings, and other accidents, (ii) to reduce cargo loss in the event of collisions, groundings, and other accidents, and (iii) to reduce damage to the marine environment from the normal operation of the vessels to which this title applies, (B) the progress made with respect to the adoption of international standards for the design, construction, alteration, and repair of vessels to which this title applies for

is, in the judgment of the Secretary, qualified to handle aboard vessels with safety, upon satisfactory proof and examination, in form and manner prescribed by the Secretary, that the applicant is in good physical condition, that such applicant is trained in and capable efficiently to perform the necessary operations aboard vessels having such cargo on board, and that the applicant fulfills the qualifications of tankerman as prescribed by the Secretary under the provisions of this section. Such certificates shall be subject to suspension or revocation on the same grounds and in the same manner and with like procedure as is provided in the case of suspension or revocation of licenses of officers under the provisions of section 4450 of this title.

“(10) Effective Date of Rules and Regulations.—Except as otherwise provided herein, the rules and regulations to be established pursuant to this section shall become effective ninety days after their promulgation unless the Secretary shall for good cause fix a different time. If the Secretary shall fix an effective date later than ninety days after such promulgation, his determination to fix such a later date shall be accompanied by an explanation of such determination which he shall publish and transmit to the Congress.

“(11) Penalties.—(A) The owner, master, or person in charge of any vessel subject to the provisions of this section, or any or all of them, who shall violate the provisions of this section, or the rules and regulations established hereunder, shall be liable to a civil penalty of not more than \$10,000.

“(B) The owner, master, or person in charge of any vessel subject to the provisions of this section, or any or all of them, who shall knowingly and willfully violate the provisions of this section or the rules and regulations established hereunder, shall be subject to a fine of not less than \$5,000 or more than \$50,000, or imprisonment for not more than five years, or both.

“(C) Any vessel subject to the provisions of this section, which shall be in violation of this section or the rules and regulations established hereunder, shall be liable in rem and may

protection of the marine environment, and (C) to the extent that the Secretary finds standards with respect to the design, construction, alteration, and repair of vessels for the purposes set forth in (A) (i), (ii), or (iii) above not possible, an explanation of the reasons therefor.

Approved July 10, 1972.

EXHIBIT R

**UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF WASHINGTON
THREE JUDGE COURT**

SUBCHAPTER P—PORTS AND WATERWAYS SAFETY

**PART 160—PORTS AND WATERWAYS SAFETY —
GENERAL**

Subpart A—General

Sec.

- 160.1 Purpose
- 160.11 Definitions.
- 160.15 Penalties.

**Subpart B—Orders and Directions of the Captain of the Port
and District Commander**

- 160.31 Applicability.
- 160.35 Delegations.
- 160.39 Compliance with directions and orders.
- 160.45 Appeals.

AUTHORITY: Sec. 104.86 Stat. 427 (33 U.S.C. 1224); 49 CFR 1.46(o)(4).

SOURCE: CGD 73-202, 40 FR 6654, Feb. 13, 1975, unless otherwise noted.

Subpart A—General

§ 160.1 Purpose.

This Subchapter P contains regulations implementing Title I of the Ports and Waterways Safety Act of 1972.

§ 160.11 Definitions.

For the purpose of this part:

(a) "United States" includes the fifty States, the District of Columbia, Puerto Rico, the territories and possessions of the United States, and the Trust Territory of the Pacific Islands.

(b) "Vessel" means every description of watercraft or other

artificial contrivance used, or capable of being used, as a means of transportation on water.

(c) "Commandant" means the Commandant of the U.S. Coast Guard.

(d) "District Commander" means the Coast Guard officer designated by the Commandant to command a Coast Guard District described in Part 3 of this chapter.

(e) "Captain of the Port" means the Coast Guard officer, under the command of a District Commander, designated by the Commandant for the purpose of giving immediate direction to Coast Guard law enforcement activities within his assigned area as described in Part 3 of this chapter.

(f) "Person" includes an individual, firm, corporation, association, governmental entity, and a partnership.

§ 160.15 Penalties.

33 U.S.C. 1226 prescribes that whoever violates a regulation issued under Title I of the Ports and Waterways Safety Act of 1972 is liable to a civil penalty of not more than \$10,000. A vessel used or employed in a violation of these regulations is liable in rem. 33 U.S.C. 1227 prescribes that whoever willfully violates a regulation issued under Title I of the Ports and Waterways Safety Act of 1972 shall be fined not less than \$5,000 or more than \$50,000 or imprisoned for not more than five years, or both.

Subpart B—Orders and Directions of the Captain of the Port and District Commander

§160.31 Applicability.

This subpart applies to all vessels on the navigable waters of the United States, except the Saint Lawrence Seaway and the Panama Canal.

§ 160.35 Delegations.

To prevent damage to, or the destruction or loss of any vessel, bridge, or other structure on or in the navigable waters of the United States, or any land structure or shore area immediately adjacent to those waters and to protect the navigable waters and the resources therein from environmental harm resulting from vessel or structure damage, destruction, or loss—

(a) Each District Commander, Captain of the Port, or their authorized representative may direct the anchoring, mooring, or movement of a vessel when necessary to prevent damage to or by that vessel or her cargo, stores, supplies, or fuel; and

(b) Each District Commander, Captain of the Port, or their authorized representative may temporarily control vessel traffic in an area which he determines to be especially hazardous, or under conditions of reduced visibility, adverse weather, vessel congestion, or other hazardous circumstances by issuing orders.

(1) Specifying times of vessel entry, movement, or departure to, from, within, or through ports, harbors, or other waters;

(2) Establishing vessel traffic routing schemes;

(3) Establishing vessel size and speed limitations and vessel operating conditions; and

(4) Restricting vessel operation, in a hazardous area or under hazardous conditions, to vessels which have particular operating characteristics and capabilities which he considers necessary for safe operation under the circumstances.

§ 160.39 Compliance with directions and orders.

Each person who has notice of the terms of an order or direction issued under § 160.35 shall comply with that order or direction.

§ 160.45 Appeals.

(a) Any person directly affected by an order or direction issued under this part may request reconsideration by the official who issued the order or direction and may appeal the order or direction through the Captain of the Port to the District Commander and then to the Commandant, whose decision shall be final.

(b) Requests for reconsideration and appeals may be written or oral, but if oral must be followed by no less than a written outline of the key points made. The Coast Guard official to whom the request or appeal is made will provide a written decision if requested.

(c) While any request or appeal is pending the order or direction remains in effect.

EXHIBIT T

**UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF WASHINGTON
THREE JUDGE COURT**

Title 33—Navigation and Navigable Waters

PART 161—VESSEL TRAFFIC SYSTEMS

Subpart A—[Reserved]

Subpart B—Puget Sound Vessel Traffic System

GENERAL RULES

Sec.

- 161.101 Purpose and applicability.
- 161.103 Definitions.
- 161.104 Vessel operation in the VTS Area.
- 161.105 Laws and regulations not affected.
- 161.107 VTC directions.
- 161.109 Authorization to deviate from these rules.
- 161.111 Emergencies.

COMMUNICATION RULES

- 161.120 Radio listening watch.
- 161.122 Radiotelephone equipment.
- 161.124 English language.
- 161.126 Time.
- 161.128 Initial report.
- 161.130 Follow-up report.
- 161.131 Final report.
- 161.133 Radio failure.
- 161.134 Report of emergency or radio failure.
- 161.135 Report of impairment to the operation of the vessel.
- 161.136 Ferry vessels.

VESSEL MOVEMENT REPORTING RULES

- 161.142 Movement reports.

TRAFFIC SEPARATION SCHEME RULES

- 161.150 Vessel operation in the TSS.
- 161.152 Direction of traffic.

- 161.154 Anchoring in the TSS.
 161.156 Joining, leaving, and crossing a traffic lane.

ROSARIO STRAIT RULES

- 161.170 Communications in Rosario Strait.
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 161.174 Entering Rosario Strait.

DESCRIPTIONS AND GEOGRAPHIC COORDINATES

- 161.180 VTS Area.
 161.183 Separation zones.
 161.185 Traffic lanes.
 161.187 Precautionary areas.
 161.188 Temporary precautionary areas.
 161.189 Reporting points.

AUTHORITY: Sec. 104, Pub. L. 92-340, 86 Stat. 424 (33 U.S.C. 1224); 37 FR 21943, 49 CFR 1.46(o)(4)¹

SOURCE: CGD 73-158R, 39 FR 25431, July 10, 1974, unless otherwise noted.

Subpart A—[Reserved]

Subpart B—Puget Sound Vessel Traffic System

GENERAL RULES

§ 161.101 Purpose and Applicability.

(a) This subpart prescribes rules for vessel operation in the Puget Sound vessel traffic system area (VTS Area) to prevent collisions and groundings and to protect the navigable waters of the VTS Area from environmental harm resulting from collisions and groundings.

(b) The General Rules in §§ 161.101-161.111 and the TSS Rules in §§ 161.150-161.154 and § 161.156 (b) and (c) of this subpart apply to the operation of all vessels.

(c) The Communication Rules in §§ 161.120-161.136, the Vessel Movement Reporting Rules in § 161.142, the TSS Rule in

¹NOTE: Sections 106 and 107 of Public Law 92-340 (33 U.S.C. 1226-1227) prescribe civil and criminal penalties for violations of the rules in this part.

§ 161.156(a), and the Rosario Strait Rules in §§ 161.170-161.174 of this subpart apply only to the operation of—

- (1) Each vessel of 300 or more gross tons that is propelled by machinery;
- (2) Each vessel of 100 or more gross tons that is carrying one or more passengers for hire;
- (3) Each commercial vessel of 26 feet or over in length engaged in towing another vessel astern, alongside, or by pushing ahead; and
- (4) Each dredge and floating plant.

§ 161.103 Definitions.

As used in this subpart—

(a) "Vessel traffic center" (VTC) means the shore based facility that operates the Puget Sound vessel traffic system.

(b) "Vessel traffic system area" (VTS Area) means the area described in § 161.180 of this part.

(c) "Traffic separation scheme" (TSS) means the network of traffic lanes, separation zones, and precautionary areas in the VTS Area.

(d) "Traffic lane" means an area of the TSS in which all vessels ordinarily proceed in the same direction.

(e) "Separation zone" means an area of the TSS that is located between two traffic lanes to keep vessels proceeding in opposite directions a safe distance apart.

(f) "Precautionary area" means an area of the TSS at the entrance of one or more traffic lanes where vessel traffic converges from two or more directions.

(g) "Person" includes an individual, firm, corporation, association, partnership, and governmental entity.

(h) "ETA" means estimated time of arrival.

§ 161.104 Vessel operation in the VTS Area.

No person may cause or authorize the operation of a vessel in the VTS Area contrary to the rules in this subpart.

§ 161.105 Laws and regulations not affected.

Nothing in this subpart is intended to relieve any person from complying with—

(a) The Navigation Rules for Harbors, Rivers, and Inland Waters Generally (33 U.S.C. §§ 151-232);

(b) Vessel Bridge-to-Bridge Radio-telephone Regulations (Part 26 of this chapter);

(c) Pilot Rules for Inland Waters (Part 80 of this chapter);

(d) Puget Sound gill net fishing rule (33 CFR 206.93);

(e) The Federal Boat Safety Act of 1971 (46 U.S.C. 1451-1489); and

(f) Any other laws or regulations.

§ 161.107 VTC directions.

(a) During conditions of vessel congestion, adverse weather, reduced visibility, or other hazardous circumstances in the VTS Area, the VTC may issue directions specifying times when vessels may enter, move within or through, or depart from ports, harbors, or other waters in the VTS Area.

(b) The master of a vessel in the VTS Area shall comply with each direction issued to him under this section.

§ 161.109 Authorization to deviate from these rules.

(a) The Commander, Thirteenth Coast Guard District may upon request issue an authorization to deviate from any rule in this subpart if he finds that the proposed operations under the authorization can be done safely. An application for an authorization must state the need for the authorization and describe the proposed operations.

(b) The VTC may, upon request, issue an authorization to deviate from any rule in this subpart for a voyage or part of a voyage on which a vessel is embarked or about to embark.

§ 161.111 Emergencies.

In an emergency, any person may deviate from any section in this subpart to the extent necessary to avoid endangering persons, property, or the environment.

COMMUNICATION RULES

§ 161.120 Radio listening watch.

The master of a vessel in the VTS Area shall continuously monitor the radio frequency designated in the Puget Sound VTS Operating Manual for the sector of the VTS Area in which the vessel is operating, except when transmitting on that frequency.

§ 161.122 Radiotelephone equipment.

Each report required by this subpart to be made by radiotelephone must be made using a radiotelephone that is capable of operation on the navigational bridge of the vessel, or in the case of a dredge, at its main control station.

§ 161.124 English language.

Each report required by this subpart must be made in the English language.

§ 161.126 Time.

Each report required by this subpart must specify time using—

- (a) The zone time in effect in the VTS Area; and
- (b) The 24-hour clock system.

§ 161.128 Initial report.

At least 30 minutes before a vessel enters or begins to navigate in the VTS Area the master of the vessel shall report, or cause to be reported, the following information to the VTC:

- (a) The name of the vessel.
- (b) The position of the vessel.
- (c) The estimated time of entering or beginning to navigate in the VTS Area.
- (d) Point of entry in the VTS Area.
- (e) Destination in the VTS Area.
- (f) ETA of the vessel at its destination.
- (g) Any condition on the vessel that may affect its navigation in the VTS Area such as fire, defective propulsion machinery, or defective steering equipment.

(h) Whether or not any dangerous cargo listed in § 124.14 of this chapter is on board the vessel.

§ 161.130 Follow-up report.

At least 15 minutes, but not more than 45 minutes, before a vessel enters or begins to navigate in the VTS Area, the master of the vessel shall report the following information by radiotelephone to the VTC:

- (a) Name, type, length, and draft of the vessel.
- (b) Any revisions to the initial report required by § 161.128 of this subpart.
- (c) The speed at which the vessel will proceed in the VTS Area.
- (d) Any tow that the towing vessel is unable to control or can control only with difficulty.
- (e) If the vessel intends to enter the TSS, the ETA and point of entry in the TSS.

§ 161.131 Final report.

Whenever a vessel anchors or moors in, or departs from, the VTS Area, the master shall report, or cause to be reported, the place of anchoring, mooring, or departing to the VTC.

§ 161.133 Radio failure.

Whenever a vessel's radiotelephone equipment fails—

- (a) Compliance with §§ 161.120 and 161.142 of this subpart is not required; and
- (b) Compliance with §§ 161.128, 161.130, and 161.131 of this subpart is not required unless the reports required by those sections can be made by telephone.

§ 161.134 Report of emergency or radio failure.

Whenever the master of a vessel deviates from any section in this subpart because of an emergency or radio failure, he shall report, or cause to be reported, the deviation to the VTC as soon as possible.

§ 161.135 Report of impairment to the operation of the vessel.

The master of a vessel in the VTS Area shall report to the VTC as soon as possible.

(a) Any condition on the vessel that may impair its navigation such as fire, defective propulsion machinery, or defective steering equipment; and

(b) Any tow that the towing vessel is unable to control, or can control only with difficulty, unless this information has already been reported.

§ 161.136 Ferry vessels.

(a) Whenever a ferry vessel is operated in the VTS Area on a schedule and a route that crosses the TSS, both of which have been previously furnished to the VTC, compliance with §§ 161.128, 161.130, 161.131, and 161.142 of this subpart is not required.

(b) The master of a ferry vessel that enters the TSS at any place other than Rosario Strait between sunset and sunrise or during reduced visibility shall report the following information by radiotelephone to the VTC at least five minutes before entry:

- (1) The name of the vessel.
- (2) The direction the vessel will proceed in the TSS.
- (3) The point of entering the TSS.
- (4) The estimated time the vessel will operate in the TSS.

VESSEL MOVEMENT REPORTING RULES

§ 161.142 Movement reports.

(a) Whenever a vessel passes a reporting point listed in § 161.189 of this subpart, the master of the vessel shall report the following information to the VTC by radiotelephone:

- (1) The name of the vessel.
- (2) The reporting point.
- (3) The time of passing the reporting point.
- (4) The next reporting point.
- (5) ETA at the next reporting point.
- (6) If the vessel is at a point of entry in the TSS, any change in speed of the vessel from the speed reported under § 161.130(c) of this subpart.

(7) If the vessel is at a point of departure from the TSS, the course and the destination or intentions of the vessel.

(b) Whenever the ETA of a vessel at a reporting point changes by more than 10 minutes, the master of the vessel shall report a revised ETA to the VTC by radiotelephone.

TRAFFIC SEPARATION SCHEME RULES

§ 161.150 Vessel operation in the TSS.

The master of a vessel in the TSS shall operate the vessel in accordance with the TSS rules prescribed in §§ 161.152-161.156.

§ 161.152 Direction of traffic.

(a) A vessel proceeding in a traffic lane shall keep the separation zone to port.

(b) A vessel in a precautionary area, except the Port Angeles precautionary area or any temporary precautionary area, shall keep the center of the precautionary area to port.

§ 161.154 Anchoring in the TSS.

No vessel may anchor in the TSS.

§ 161.156 Joining, leaving, and crossing a traffic lane.

(a) A vessel may join, cross, or leave a traffic lane only at a precautionary area unless the VTC has been notified of the point at which the vessel will join, cross, or leave the traffic lane.

(b) A vessel crossing a traffic lane shall, to the extent possible, maintain a course that is perpendicular to the direction of the flow of traffic in the traffic lane.

(c) A vessel joining or leaving a traffic lane shall steer a course to converge on or diverge from the direction of traffic flow in the traffic lane at as small an angle as possible.

ROSARIO STRAIT RULES

§ 161.170 Communications in Rosario Strait.

Before a vessel meets, overtakes, or crosses ahead of any vessel in Rosario Strait, the master shall transmit the intentions of his vessel to the master of the other vessel on the frequency designated under the Bridge-to-Bridge Radiotelephone Act for the purpose of arranging safe passage.

§ 161.172 Report before entering Rosario Strait.

At least 15 minutes before a vessel enters the TSS at Rosario Strait, the master of the vessel shall report the vessel's ETA at, and point of entry in, Rosario Strait to the VTC by radiotelephone.

§ 161.174 Entering Rosario Strait.

(a) A vessel may not enter Rosario Strait unless—

(1) The report required by § 161.172 of this subpart has been made;

(2) The radio equipment on the vessel that is used to transmit the reports required by this subpart is in operation;

(3) During periods of visibility of 2 miles or less, the radar on a vessel equipped with radar is in operation and manned; and

(4) The vessel is free of any conditions that may impair its navigation such as fire, defective propulsion machinery, or defective steering equipment.

(b) The master of a vessel shall operate the vessel in accordance with paragraph (a) of this section.

DESCRIPTIONS AND GEOGRAPHIC COORDINATES

§ 161.180 VTS Area.

The VTS Area consists of the navigable waters of the United States inshore of the boundary line of inland waters described in § 82.120 of this chapter. This area includes the waters in the Strait of Georgia, Haro Strait, and the Strait of Juan de Fuca that are east of the line of demarcation, and Rosario Strait, Bellingham Bay, Padilla Bay, Admiralty Inlet, Puget Sound, Possession Sound, Elliot Bay, Hood Canal, Commencement Bay, the Narrows west of Tacoma, Carr Inlet, Case Inlet, and navigable waters adjacent to these areas.

§ 161.183 Separation zones.

(a) Each separation zone is 500 yards wide and centered on a line that extends from one point to another, or through several points, described in paragraph (c) of this section.

(b) Two boundaries of each separation zone are parallel to its centerline and extend to and intersect with the boundary of

a precautionary area. No part of any separation zone is contained in a precautionary area.

(c) The latitude and longitude describing the centerline of the separation zone are:

- (1) Between precautionary area "S" and "SA",
 - (i) 48°12'22" N. 123°06'30" W.
 - (ii) 48°11'35" N. 122°51'55" W.
- (2) Between precautionary area "R" and "RA",
 - (i) 48°16'26" N. 123°06'30" W.
 - (ii) 48°19'06" N. 123°00'09" W.
- (3) Between precautionary area "RA" and "SA",
 - (i) 48°18'45" N. 122°57'30" W.
 - (ii) 48°12'40" N. 122°51'01" W.
- (4) Between precautionary area "RA" and "RB",
 - (i) 48°20'26" N. 122°57'01" W.
 - (ii) 48°24'14" N. 122°48'00" W.
 - (iii) 48°25'28" N. 122°46'23" W.
- (5) Between precautionary area "RB" and "SA",
 - (i) 48°25'12" N. 122°44'40" W.
 - (ii) 48°24'10" N. 122°44'12" W.
 - (iii) 48°12'52" N. 122°49'03" W.
- (6) Between precautionary area "SA" and "SC",
 - (i) 48°10'43" N. 122°47'50" W.
 - (ii) 48°07'43" N. 122°30'56" W.
 - (iii) 48°01'43" N. 122°38'02" W.
- (7) Between precautionary area "SC" and "SF",
 - (i) 48°00'36" N. 122°37'24" W.
 - (ii) 47°57'21" N. 122°34'12" W.
 - (iii) 47°55'24" N. 122°30'16" W.
 - (iv) 47°53'39" N. 122°28'21" W.
- (8) Between precautionary area "SF" and "SH",
 - (i) 47°52'34" N. 122°27'40" W.
 - (ii) 47°44'31" N. 122°25'41" W.
 - (iii) 47°40'18" N. 122°27'33" W.
- (9) Between precautionary area "SH" and "T",
 - (i) 47°39'05" N. 122°27'42" W.
 - (ii) 47°34'54" N. 122°26'54" W.
- (10) Between precautionary area "T" and "TC",
 - (i) 47°33'42" N. 122°26'33" W.
 - (ii) 47°26'53" N. 122°24'12" W.

- (iii) 47°23'07" N. 122°21'08" W.
 - (iv) 47°19'54" N. 122°26'37" W.
- Between precautionary area "CA" and "C",
- (i) 48°44'15" N. 122°45'39" W.
 - (ii) 48°41'39" N. 122°43'34" W.

§ 161.185 Traffic lanes.

(a) Except as provided in paragraph (c) of this section, each traffic lane consists of the area within two parallel boundaries that are 1000 yards apart and that extend to and intersect with the boundary of a precautionary area. One of these parallel boundaries is parallel to and 250 yards from the centerline of a separation zone.

(b) No part of any traffic lane is contained in a precautionary area.

(c) The traffic lane in Rosario Strait consists of the area enclosed by a line beginning at latitude 48°26'50" N., longitude 122°43'27" W.; thence northerly to latitude 48°36'06" N., longitude 122°44'56" W.; thence northeasterly to latitude 48°39'18" N., longitude 122°42'42" W.; thence westerly and northwesterly along the boundary of precautionary area "C" to latitude 48°39'37" N.; longitude 122°43'58" W.; thence southerly to latitude 48°38'24" N., longitude 122°44'08" W.; thence southwesterly to latitude 48°36'08" N., longitude 122°45'44" W.; thence southerly to latitude 48°29'30" N., longitude 122°44'41" W.; thence southwesterly to latitude 48°27'37" N., longitude 122°45'27" W.; thence northeasterly and southeasterly along the boundary of precautionary area "RB" to the point of beginning.

§ 161.187 Precautionary areas.

The precautionary areas consist of:

(a) *Port Angeles precautionary area.* An area enclosed by a line beginning on the shoreline at New Dungeness Spit at latitude 48°11'00" N., longitude 123°06'30" W.; thence due north to latitude 48°17'10" N., longitude 123°06'30" W.; thence southwesterly to latitude 48°10'00" N., longitude 123°27'38" W.; thence due south to the shorelines; thence along the shoreline to the point of beginning.

(b) *Precautionary area "RA"*. A circular area of 2,500 yards radius centered at latitude 48°19'46" N., longitude 122°58'34" W.;

(c) *Precautionary area "RB"*. A circular area of 2,500 yards radius centered at latitude 48°26'24" N., longitude 122°45'12" W.;

(d) *Precautionary area "C"*. A circular area of 2,500 yards radius centered at latitude 48°40'34" N., longitude 122°42'44" W.;

(e) *Precautionary area "CA"*. A circular area of 2,500 yards radius centered at latitude 48°45'19" N., longitude 122°46'26" W.;

(f) *Precautionary area "SA"*. A circular area of 3,000 yards radius centered at latitude 48°11'28" N., longitude 122°49'43" W.;

(g) *Precautionary area "SC"*. A circular area of 1,250 yards radius centered at latitude 48°01'06" N., longitude 122°37'54" W.;

(h) *Precautionary area "SF"*. A circular area of 1,250 yards radius centered at latitude 47°53'10" N., longitude 122°27'48" W.;

(i) *Precautionary area "SH"*. A circular area of 1,250 yards radius centered at latitude 47°39'42" N., longitude 122°27'48" W.;

(j) *Precautionary area "T"*. A circular area of 1,250 yards radius centered at latitude 47°34'19" N., longitude 122°26'47" W.;

(k) *Precautionary area "TC"*. A circular area of 1,250 yards radius centered at latitude 47°19'30" N., longitude 122°27'19" W.

§ 161.188 Temporary precautionary areas.

The Commander, Thirteenth Coast Guard District, may amend the description of the TSS in §§ 161.180-161.189 of this subpart to establish temporary precautionary areas to provide for seasonal activities such as fishing that affect the safe passage of vessels in the TSS.

§ 161.189 Reporting points.

The reporting points are—

- (a) Buoy "R" at latitude 48°16'26" N., longitude 123°06'30" W.
- (b) Buoy "S" at latitude 48°12'22" N., longitude 123°06'30" W.
- (c) Buoy "SA" at latitude 48°11'28" N., longitude 122°49'43" W.
- (d) Buoy "RB" at latitude 48°26'24" N., longitude 122°45'12" W.
- (e) Buoy "C" at latitude 48°40'34" N., longitude 122°42'44" W.
- (f) Buoy "SC" at latitude 48°01'06" N., longitude 122°37'54" W.
- (g) Buoy "SH" at latitude 47°39'42" N., longitude 122°27'48" W.
- (h) Buoy "TB" at latitude 47°23'07" N., longitude 122°21'08" W.
- (i) The boundary of the TSS.

EXHIBIT U
DEPARTMENT OF TRANSPORTATION
COAST GUARD
VESSEL TRAFFIC SYSTEM
PUGET SOUND
OPERATING MANUAL
SEPTEMBER 1974

UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF WASHINGTON

INTRODUCTION

This manual is intended to provide the user with information necessary for participation in the Puget Sound Vessel Traffic System. It contains the rules and regulations which delineate the system, and which are published in Subchapter P, Title 33, Code of Federal Regulations. It also contains supplementary text which is intended to be explanatory in nature. This manual is not intended to conflict with or modify the regulations in any respect, and any apparent conflict should be resolved in favor of the regulations. The Coast Guard will keep the manual current with any permanent changes issued to the regulations. Changes of a temporary nature will be promulgated by the Commander, Thirteenth Coast Guard District, in notices to mariners, and will not be incorporated in this operating manual.

In several respects, the regulations contained herein are applicable to *all* vessels, no matter the size, operating in the Puget Sound Vessel Traffic System Area. Other regulations in the manual are applicable only to vessels of certain length or tonnage. Therefore, it is incumbent upon the operator of any vessel in this area to be familiar with the requirements of the regulations for the particular type vessel being operated. Public Law 92-340 prescribes civil and criminal penalties for violations of the regulations in this part. The maximum civil penalty is \$10,000. The criminal penalty for a willful violation is a fine of not less than \$5,000 nor more than \$50,000 and/or imprisonment for not more than 5 years.

The Puget Sound Vessel Traffic System is comprised of two major components, a traffic separation scheme, and a vessel movement reporting system. The traffic separation scheme comprises a network of one-way traffic lanes, separation zones in between, and precautionary areas. The traffic lanes are each 1,000 yards wide, and are separated by 500 yard wide separation zones. Each traffic lane has a minimum depth of 60 feet (except 40 feet off the east end of Partridge Bank).

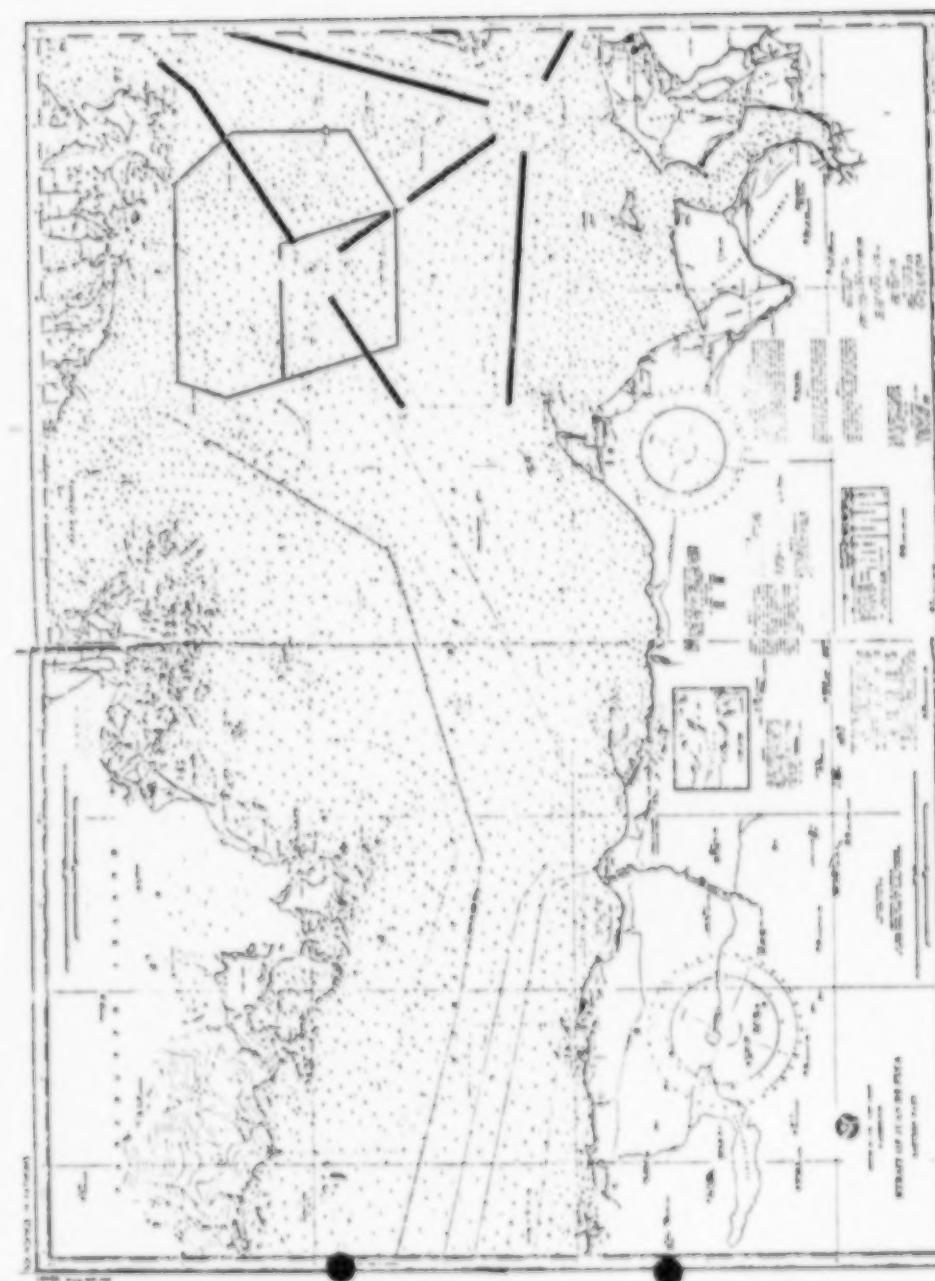
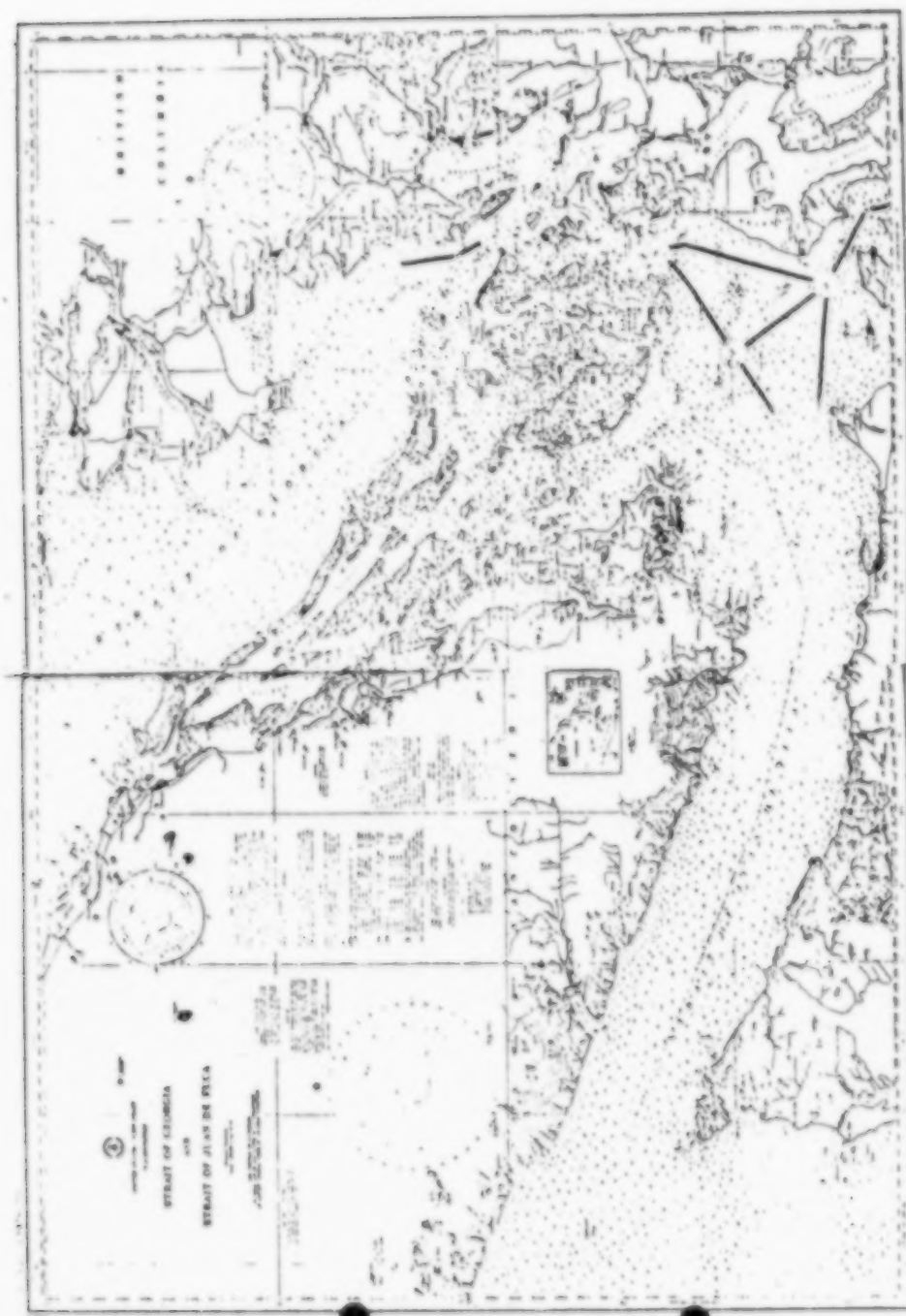
The vessel movement reporting system is based upon a VHF-FM communications network maintained continuously by the Coast Guard Vessel Traffic Center in Seattle. This center will process information received from vessels in required and voluntary reports, and will, in turn, disseminate navigational safety information to vessels participating in the system. The mariner is cautioned that information provided by the vessel traffic center is, to a large extent, generated from these reports by vessels and can be no more accurate than that received. Additionally, the Coast Guard may not have first hand knowledge of hazardous circumstances existing in the Vessel Traffic System Area, and unreported hazards may confront the mariner at any time.

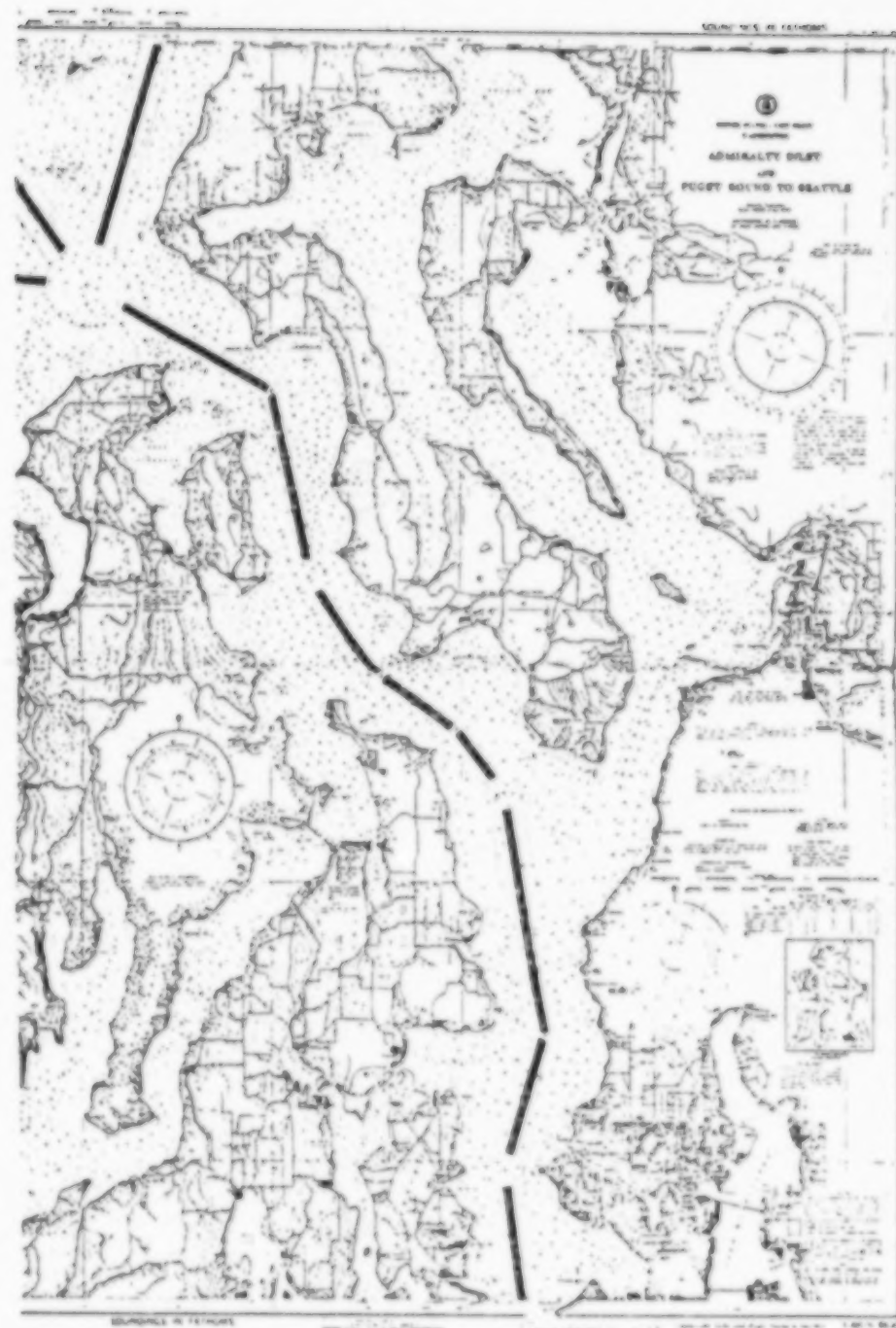
The Coast Guard welcomes any suggestions for improvement to this manual or to the Puget Sound Vessel Traffic System.

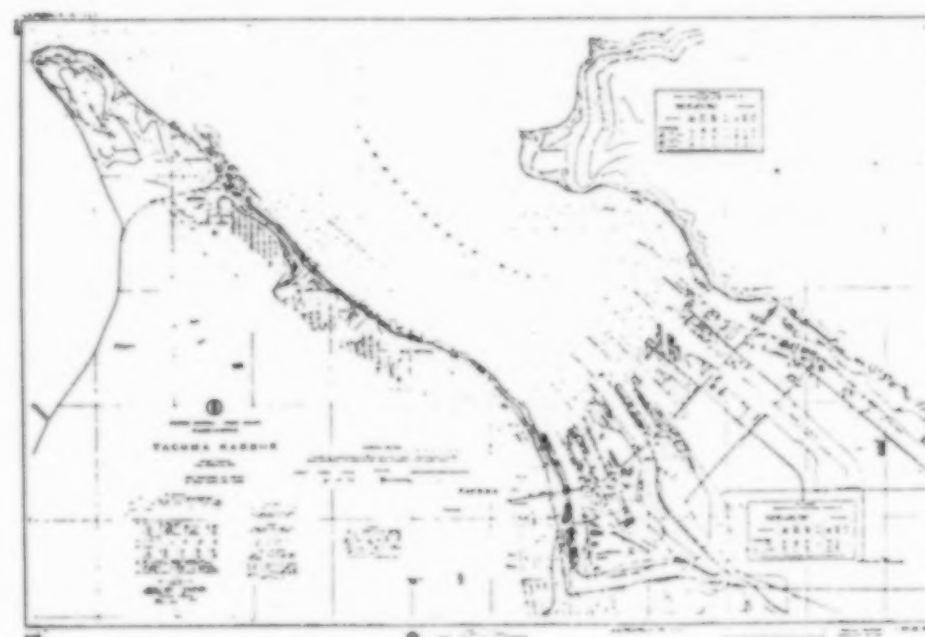
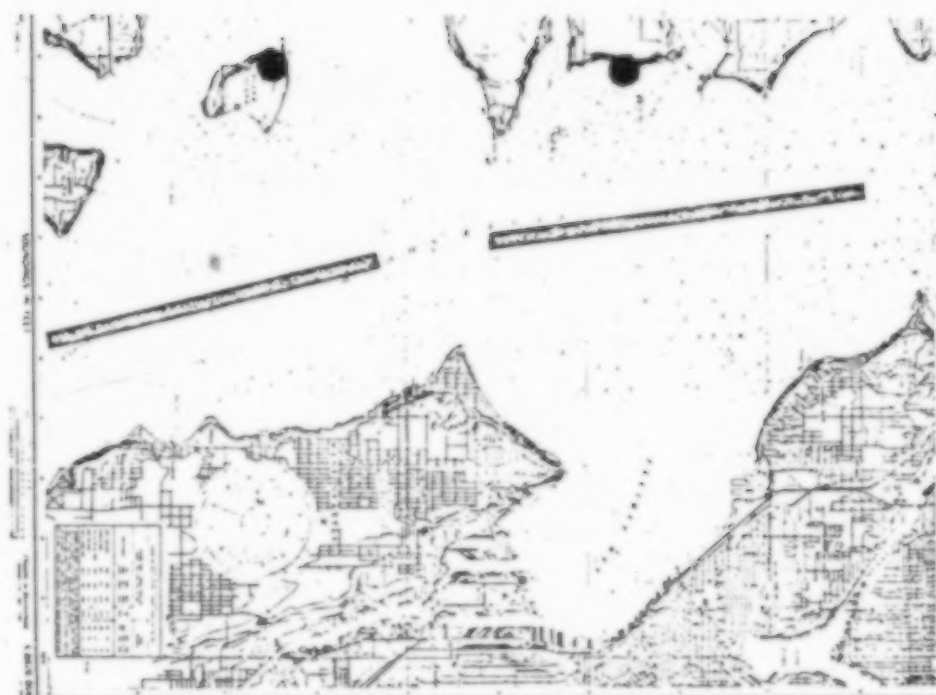
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CHARTLETS OF THE VESSEL TRAFFIC SYSTEM AREA







NAVIGATION AND NAVIGABLE WATERS

TITLE 33, CODE OF FEDERAL REGULATIONS

PART 161—Vessel Traffic Systems

Subpart A—[Reserved]

Subpart B—Puget Sound Vessel Traffic System

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- 161.189 Reporting points.

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Subpart A—[Reserved]

Subpart B—Puget Sound Vessel Traffic System

Where necessary to amplify a particular section, supplemental text will immediately follow that section in indented and solid type. The supplemental text is not part of the regulation it amplifies.

GENERAL RULES

§ 161.101 Purpose and Applicability.

(a) This subpart prescribes rules for vessel operation in the Puget Sound Vessel Traffic System Area (VTS Area) to prevent

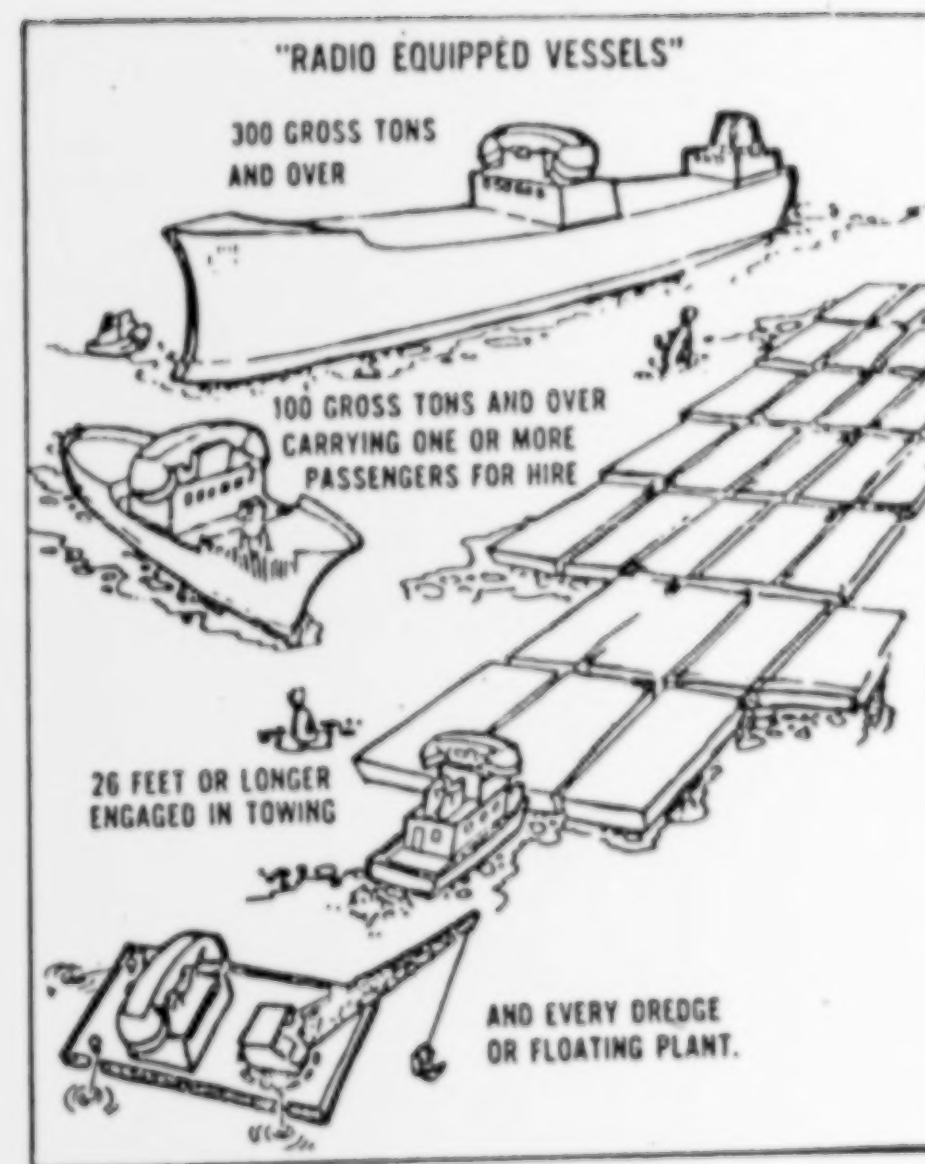
collisions and groundings and to protect the navigable waters of the VTS Area from environmental harm resulting from collisions and groundings.

(b) The General Rules in §§ 161.101-161.111 and the TSS Rules in §§ 161.150-161.154 and § 161.156(b) and (c) of this subpart apply to the operation of all vessels.

(c) The Communication Rules in §§ 161.120-161.136, the Vessel Movement Reporting Rules in § 161.142, the TSS Rule in § 161.156(a), and the Rosario Strait Rules in §§ 161.170-161.174 of this subpart apply only to the operation of—

- (1) Each vessel of 300 or more gross tons that is propelled by machinery;
- (2) Each vessel of 100 or more gross tons that is carrying one or more passengers for hire;
- (3) Each commercial vessel of 26 feet or over in length engaged in towing another vessel astern, alongside; or by pushing ahead; and
- (4) Each dredge and floating plant.

For the purposes of brevity, the vessels described in Sections 161.101(c)(1) through (4) above will be referred to as "radio equipped vessels" in the supplemental text of this manual. The primary users of the VTS will be "radio equipped vessels." However, within the capacity of the system, all possible assistance concerning safety of navigation will be furnished to any participating vessel in the VTS Area.



§ 161.103 Definitions.

As used in this subpart—

- (a) "Vessel traffic center" (VTC) means the shore based facility that operates the Puget Sound vessel traffic system.
- (b) "Vessel traffic system area" (VTS Area) means the area described in § 161.180 of this part.

(c) "Traffic separation scheme" (TSS) means the network of traffic lanes, separation zones, and precautionary areas in the VTS Area.

(d) "Traffic lane" means an area of the TSS in which all vessels ordinarily proceed in the same direction.

(e) "Separation zone" means an area of this TSS that is located between two traffic lanes to keep vessels proceeding in opposite directions a safe distance apart.

(f) "Precautionary area" means an area of the TSS at the entrance of one or more traffic lanes where vessel traffic converges from two or more directions.

(g) "Person" includes an individual, firm, corporation, association, partnership, and governmental entity.

(h) "ETA" means estimated time of arrival.

§ 161.104 Vessel operation in the VTS Area.

No person may cause or authorize the operation of a vessel in the VTS Area contrary to the rules in this subpart.

§ 161.105 Laws and regulations not affected.

Nothing in this subpart is intended to relieve any person from complying with—

(a) The Navigation Rules for Harbors, Rivers, and Inland Waters Generally (33 U.S.C. §§ 151-232);



(b) Vessel Bridge-to-Bridge Radiotelephone Regulations (Part 26 of this chapter);

(c) Pilot Rules for Inland Waters (Part 80 of this chapter);

(d) Puget Sound gill net fishing rule (33 CFR 206.93);

(e) The Federal Boat Safety Act of 1971 (46 U.S.C. 1451-1489); and

(f) Any other laws or regulations.

§ 161.107 VTC directions

(a) During conditions of vessel congestion, adverse weather, reduced visibility, or other hazardous circumstances in the VTS Area, the VTC may issue directions specifying times when vessels may enter, move within or through, or depart from ports, harbors, or other waters in the VTS Area.

(b) The master of a vessel in the VTS Area shall comply with each direction issued to him under this section.

The Coast Guard wishes to stress that under normal circumstances the VTC will exercise no direct control over vessel movements in the VTS Area. However, when the situation dictates, the Coast Guard will exert control over vessel movements by invoking this regulation. Responsibility of the master or pilot for safe navigation and prudent maneuvering of his vessel is in no way lessened by this regulation.

§ 161.109 Authorization to deviate from these rules.

(a) The Commander, Thirteenth Coast Guard District may upon request issue an authorization to deviate from any rule in this subpart if he finds that the proposed operations under the authorization can be done safely. An application for an authorization must state the need for the authorization and describe the proposed operations.

(b) The VTC may, upon request, issue an authorization to deviate from any rule in this subpart for a voyage or part of a voyage on which a vessel is embarked or about to embark.

Requests to deviate from any rule are to be submitted in writing for paragraph (a) and orally for paragraph (b). Written requests could be, for example, a request for a class or group of vessels to be exempt or deviate from a particular rule indefinitely or for an extended period of time. As an example of an oral request to the VTC, the master of a vessel who determines that his vessel should not transit the south-bound lane past the shoal at Partridge Bank may obtain authorization from the VTC to navigate in the separation zone or northbound traffic lane. Since this authorization is

dependent on other traffic in the area, subsequent requests for the same deviation from the rules must again be authorized by the VTC.

§ 161.111 Emergencies.

In an emergency, any person may deviate from any section in this subpart to the extent necessary to avoid endangering persons, property, or the environment.

When necessary to deviate from the rules for reasons of safety, the master of a vessel shall report or cause to be reported, the deviation to the VTC as soon as possible. (section 161.134)

COMMUNICATION RULES

The rules in sections 161.120 through 161.136 below apply to "radio equipped vessels."

§ 161.120 Radio listening watch.

The master of a vessel in the VTS Area shall continuously monitor the radio frequency designated in the Puget Sound VTS Operating Manual for the sector of the VTS Area in which the vessel is operating, except when transmitting on that frequency.

VHF-FM Channel 13 (156.65 MHz) has been designated as the radiotelephone frequency for the entire VTS Area, and will be used to transmit and receive vessel movement data, and other maritime safety information. The VTC will maintain a continuous guard on this frequency and on VHF-FM Channel 16 (156.8 MHz), the National Distress, Safety, and Calling Frequency. SEATTLE TRAFFIC is the radio sign. Radio procedure will be in accordance with the Radio Regulations promulgated by the International Telecommunications Union. Sample message formats are provided in Appendix C.



Four remote receiver/transmitter sites are located around the Puget Sound area for total coverage:

1. Bahokus Peak Cape Flattery 1600 ft
2. Mount Consitution .. Orcas Island 2750 ft
3. Gold Mountain Kitsap Peninsula 1900 ft
4. West Point Seattle 100 ft

Each transmitter has a range of approximately 50 miles and is keyed remotely from the Vessel Traffic Center in Seattle.

To preclude the probability that calls from the many small craft on the sound may overload the Vessel Traffic System and Bridge-to-Bridge Radiotelephone Frequency, recreational vessels are requested to minimize communica-

tions with the Vessel Traffic Center on channel 13. Those recreational craft that have the capability to guard two channels simultaneously are encouraged to monitor channel 13 when actually navigating within a traffic lane or precautionary area. Passive monitoring of channel 13 will yield much information on major vessel movements, special operations, the status of aids to navigation, etc., without congesting the frequency.

§ 161.122 Radiotelephone equipment.

Each report required by this subpart to be made by radiotelephone must be made using a radiotelephone that is capable of operation on the navigational bridge of the vessel, or in the case of a dredge, at its main control station.

§ 161.124 English language.

Each report required by this subpart must be made in the English language.



§ 161.126 Time.

Each report required by this subpart must specify time using—

- (a) The zone time in effect in the VTS Area; and
- (b) The 24-hour clock system.

§ 161.128 Initial report.

At least 30 minutes before a vessel enters or begins to navigate

in the VTS Area the master of the vessel shall report, or cause to be reported, the following information to the VTC:

- (a) The name of the vessel.
- (b) The position of the vessel.
- (c) The estimated time of entering or beginning to navigate in the VTS Area.
- (d) Point of entry in the VTS Area.
- (e) Destination in the VTS Area.
- (f) ETA of the vessel at its destination.
- (g) Any condition on the vessel that may affect its navigation in the VTS Area such as fire, defective propulsion machinery, or defective steering equipment.
- (h) Whether or not any dangerous cargo listed in § 124.14 of this chapter is on board the vessel.

§ 161.130 Follow-up report.

At least 15 minutes, but not more than 45 minutes, before a vessel enters or begins to navigate in the VTS Area, the master of the vessel shall report the following information by radiotelephone to the VTC:

- (a) Name, type, length, and draft of the vessel.
- (b) Any revisions to the initial report required by § 161.128 of this subpart.
- (c) The speed at which the vessel will proceed in the VTS Area.
- (d) Any tow that the towing vessel is unable to control or can control only with difficulty.
- (e) If the vessel intends to enter the TSS, the ETA and point of entry in the TSS.

Reported vessel speed should be speed over the ground.

At the discretion of the master, the initial and follow-up reports may be combined and given at one time, provided they are made within the time limitations as stated above for the follow-up report. For example, the initial report may be made one hour prior to entering the VTS Area. The follow-up report may not be made at the same time because the follow-up report time limitations would not be met.

Both reports are required for a vessel changing berths in a port. If the master is not on board or is unable to make the reports himself, he still has the responsibility to ensure that these reports are made in his absence.

Should a vessel not carry out her intended plans reported in the above reports within the allotted time, revised reports must be initiated.

As each vessel checks into the system or reports at a reporting point, the VTC will advise that vessel or other traffic for a specific section of channel, and radio traffic permitting, will give a listing of vessels in sequence, with their plotted positions, destination and speed upon request.

§ 161.131 Final report.

Whenever a vessel anchors or moors in, or departs from, the VTS Area, the master shall report, or cause to be reported, the place of anchoring, mooring, or departing to the VTC.

Where a vessel has moored or anchored in the VTS Area, its estimated time of next movement should be included in this report.

The master of a vessel in the VTS Area should report by radiotelephone to the VTC any hazardous circumstances whenever observed unless they are known to have been previously reported. These include the following:

- (a) Concentrations of fishing vessels.
- (b) Reduced visibility or other adverse weather conditions.
- (c) Concentrations of floating logs or other obstructions.
- (d) Any defect in an aid to navigation.
- (e) Any defect observed on another vessel that may affect the navigation of that vessel in the VTS Area.

Regattas may occur within portions of the Vessel Traffic System lanes at any time throughout the year. The VTC will normally be in contact with the regatta officials. The general position of the regatta will be passed to affected users of the Vessel Traffic System by the VTC.

Experience in Puget Sound is that concentrations of fishing vessels are attracted to some areas during certain periods such that the possibility of interference and the potential for accidents are increased significantly. Pursuant to State law, the State of Washington prescribes areas of Puget Sound and adjacent State waters where commercial salmon fishing is permitted from time to time. Some areas are closed permanently to fishing. Not all areas are open to fishing at the same time and, when open, not all modes of fishing are always permissible. Thus concentrations of fishing vessels will appear from time to time at varied locations

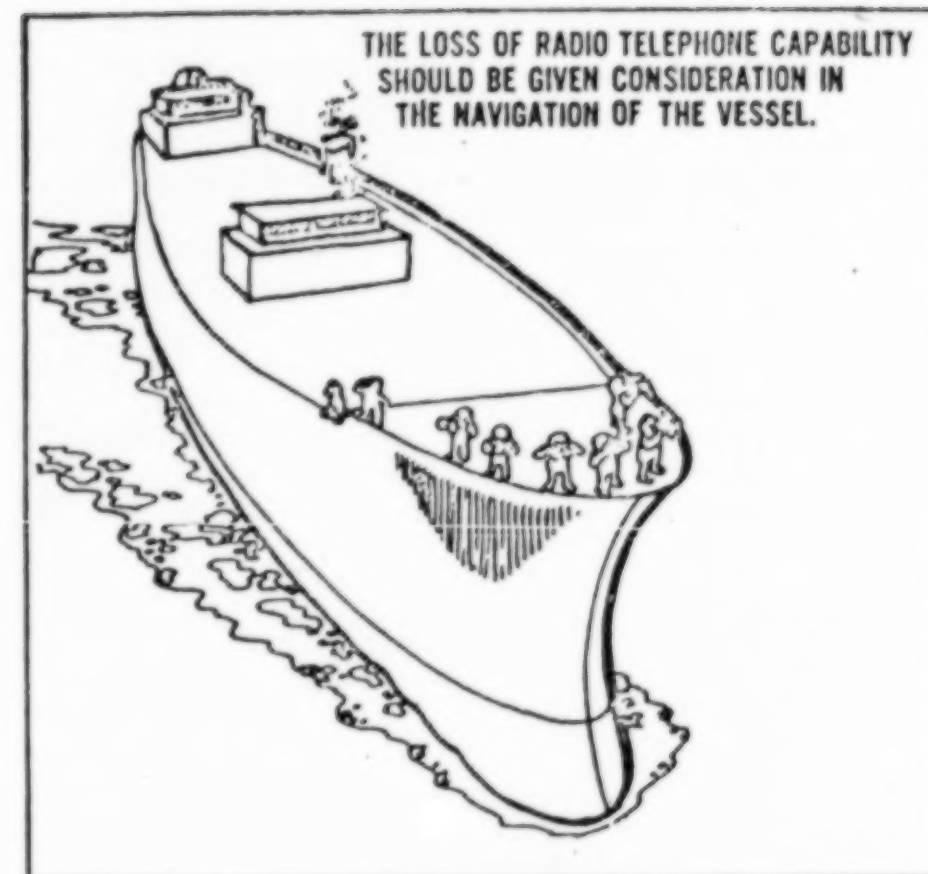
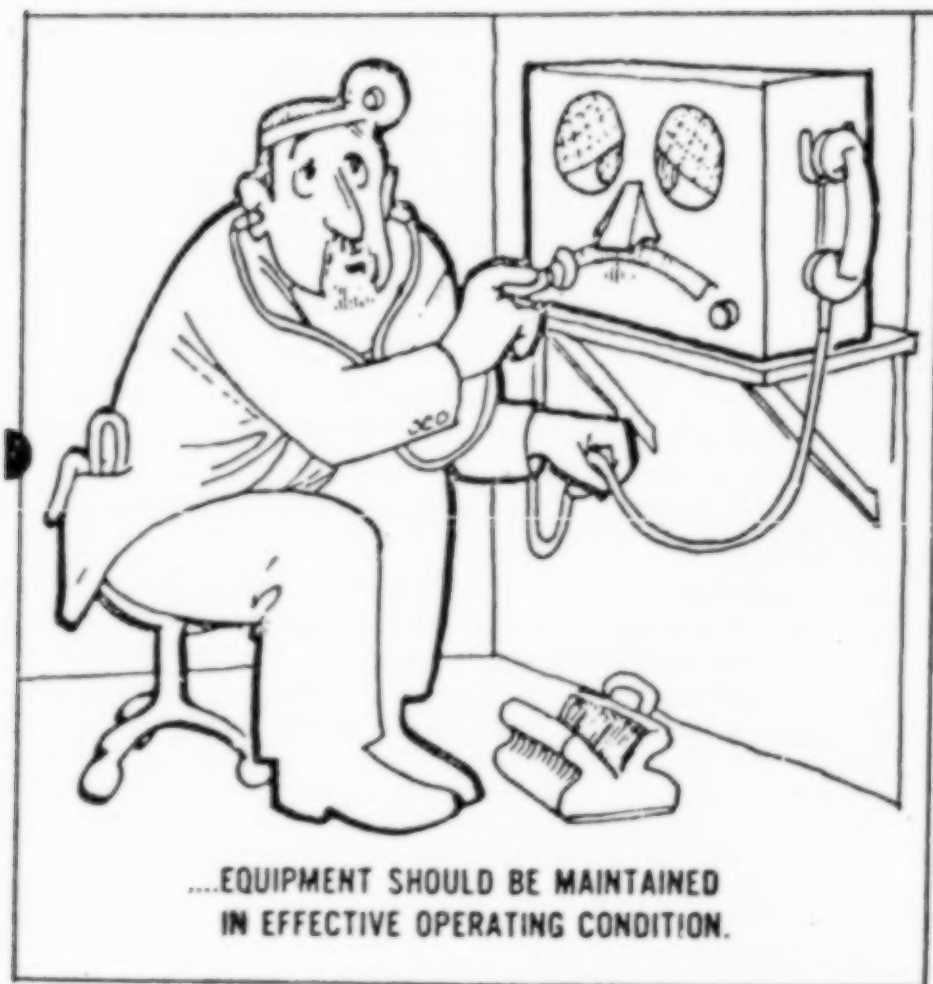
according to changes made by the State in fishing rules. These changes are made frequently and sometimes on short notice. The "open season" for a particular fishing mode in a particular area is repeated periodically, often weekly, for a period of one or more months. The VTC will advise users of the Vessel Traffic System of expected concentrations of fishing vessels along their proposed route. Unusual concentrations of fishing vessels or other non-participants should be reported to the VTC as observed by participating vessels. This will update the VTC knowledge of marine activities and supplement information available for broadcast.

§ 161.133 Radio failure.

Whenever a vessel's radiotelephone equipment fails—

- (a) Compliance with §§ 161.120 and 161.142 of this subpart is not required; and
- (b) Compliance with §§ 161.128, 161.130, and 161.131 of this subpart is not required unless the reports required by those sections can be made by telephone.

In the event of radiotelephone failure, a vessel is not required to maintain a radio listening watch on channel 13, and is not required to make movement reports. The initial, follow-up, and final reports are required to be made by telephone, if possible. However, if the radiotelephone equipment carried aboard a vessel ceases to operate, the master should exercise due diligence to restore it or cause it to be restored to effective operating condition at the earliest practicable time.



§ 161.134 Report of emergency or radio failure.

Whenever the master of a vessel deviates from any section in this subpart because of an emergency or radio failure, he shall report, or cause to be reported, the deviation to the VTC as soon as possible.

§ 161.135 Report of impairment to the operation of the vessel.

The master of a vessel in the VTS Area shall report to the VTC as soon as possible:

- (a) Any condition on the vessel that may impair its navigation such as fire, defective propulsion machinery, or defective steering equipment; and
- (b) Any tow that the towing vessel is unable to control, or can control only with difficulty, unless this information has already been reported.

§ 161.136 Ferry vessels.

(a) Whenever a ferry vessel is operated in the VTS Area on a schedule and a route that crosses the TSS, both of which have been previously furnished to the VTC, compliance with §§ 161.128, 161.130, 161.131, and 161.142 of this subpart is not required.

(b) The master of a ferry vessel that enters the TSS at any place other than Rosario Strait between sunset and sunrise or during reduced visibility shall report the following information by radiotelephone to the VTC at least five minutes before entry:

- (1) The name of the vessel.
- (2) The direction the vessel will proceed in the TSS.
- (3) The point of entering the TSS.
- (4) The estimated time the vessel will operate in the TSS.

Several ferry crossings exist throughout the Vessel Traffic System Area. These include:

1. Port Angeles Victoria, B. C.
2. Anacortes San Juan Islands
3. Port Townsend Keystone
4. Mukilteo Columbia Beach
5. Edmonds Kingston
6. Seattle Winslow
7. Seattle Bremerton
8. Fauntleroy Vashon Island
9. Point Defiance Vashon Island

Upon request, ferries will be advised of other vessels in their vicinity. During periods of darkness and low visibility the VTC will inform participating vessels of ferry crossings upon request or when the VTC considers such information to be appropriate to the situation.

VESSEL MOVEMENT REPORTING RULES

Section 161.142 below applies to "radio equipped vessels."

§ 161.142 Movements reports.

(a) Whenever a vessel passes a reporting point listed in § 161.189 of this subpart, the master of the vessel shall report the following information to the VTC by radiotelephone:

- (1) The name of the vessel.
- (2) The reporting point.
- (3) The time of passing the reporting point.
- (4) The next reporting point.
- (5) ETA at the next reporting point.

(6) If the vessel is at a point of entry in the TSS, any change in speed of the vessel from the speed reported under § 161.130(c) of this subpart.

(7) If the vessel is at a point of departure from the TSS, the course and the destination or intentions of the vessel.

(b) Whenever the ETA of a vessel at a reporting point changes by more than 10 minutes, the master of the vessel shall report a revised ETA to the VTC by radiotelephone.

Reports transmitted to the VTC are the primary source of data for the Vessel Traffic System. As a vessel intending to or required to participate in the Puget Sound VTS enters the VTS Area, it should report movement information as precisely as possible so that an accurate dead reckoning plot of the vessel's passage can be maintained by the VTC.

The reporting points are as follows:

- When North of New Dungeness Light (Buoy R)
- When Northeast of Colville Point (Buoy RB)
- When Northeast of Lawrence Point (Buoy C)
- When abeam of New Dungeness Light ... (Buoy S)
- When Southwest of Point Partridge
Light (Buoy SA)
- When Southwest of Bush Point Light .. (Buoy SC)
- When West of West Point Light (Buoy SH)
- When abeam of Robinson Point (Buoy TB)
- When at the limits of the TSS

TRAFFIC SEPARATION SCHEME RULES

With the exception of Section 161.156(a), which requires a radio report and, therefore, applies only to "radio equipped vessels", the TSS Rules below apply to all vessels in the TSS.

§ 161.150 Vessel operation in the TSS.

The master of a vessel in the TSS shall operate the vessel

in accordance with the TSS rules prescribed in §§ 161.152-161.156.

Masters of "radio equipped vessels" are strongly encouraged to navigate within the traffic separation scheme, even though they are not required by regulations to do so. Any vessel choosing to navigate in the TSS must follow the TSS Rules.

§ 161.152 Direction of traffic.

(a) A vessel proceeding in a traffic lane shall keep the separation zone to port.

(b) A vessel in a precautionary area, except the Port Angeles precautionary area or any temporary precautionary area, shall keep the center of the precautionary area to port.

The center of each circular precautionary area is marked by a black and white vertically striped lighted buoy. Section 161.188 provides for the designation of temporary precautionary areas.

§ 161.154 Anchoring in the TSS.

No vessel may anchor in the TSS.

§ 161.156 Joining, leaving, and crossing a traffic lane.

(a) A vessel may join, cross, or leave a traffic lane only at a precautionary area unless the VTC has been notified of the point at which the vessel will join, cross, or leave the traffic lane.

(b) A vessel crossing a traffic lane shall, to the extent possible, maintain a course that is perpendicular to the direction of the flow of traffic in the traffic lane.

(c) A vessel joining or leaving a traffic lane shall steer a course to converge on or diverge from the direction of traffic flow in the traffic lane at as small an angle as possible.

Small vessel operation in proximity to the TSS. The Puget Sound area and the waters of the Pacific Northwest have historically supported and presently support a valuable fishery (both commercial and by rod and reel) and a large and ever increasing recreational fleet, both sail and power. There are seven important commercial seaports in Puget Sound. The establishment of the Puget Sound VTS and the Puget Sound VTS Regulations is a major effort of the U.S.

Coast Guard to ensure all of these diverse interests the continued use of these waters while minimizing danger of collisions or groundings that might subject the navigable waters of this beautiful area to environmental harm.

The majority of commercial traffic under the Puget Sound VTS Regulations will follow nautical "traffic lanes" as shown on the current large and small scale nautical charts for this area.

Small vessels should not impede the passage of "radio equipped vessels" in the traffic lanes. The operator of each small vessel in the VTS Area is bound by law to observe the regulations for the TSS in this operating manual and the statutory Inland Rules of the Road which apply everywhere within the VTS Area.

Specifically, sections 161.150 through 161.156 govern the operation of small craft in the TSS, prescribing the direction of traffic, and prohibiting anchoring in the TSS.

In addition to the TSS rules, the statutory Inland Rules of the Road and the Puget Sound gill net fishing rule (33 CFR 206.93) also apply to small vessels in the VTS Area. Of particular significance is Article 26 of the Inland Rules of the Road which provides in part that a vessel engaged in fishing does not have the right to obstruct a fairway used by other vessels. The traffic lanes in the TSS are fairways to which Article 26 applies.

ROSARIO STRAIT RULES

The Rosario Strait Rules in Sections 161.170 through 161.174 below apply to "radio equipped vessels."

§ 161.170 Communications in Rosario Strait.

Before a vessel meets, overtakes, or crosses ahead of any vessel in Rosario Strait, the master shall transmit the intentions of his vessel to the master of the other vessel on the frequency designated under the Bridge-to-Bridge Radiotelephone Act for the purpose of arranging safe passage.

§ 161.172 Report before entering Rosario Strait.

At least 15 minutes before a vessel enters the TSS at Rosario Strait, the master of the vessel shall report the vessel's ETA at, and point of entry in, Rosario Strait to the VTC by radiotelephone.

This rule applies not only to north or south entries into

the Rosario Strait TSS, but includes east or west crossings of the TSS.

§ 161.174 Entering Rosario Strait.

(a) A vessel may not enter Rosario Strait unless—

(1) The report required by § 161.172 of this subpart has been made;

(2) The radio equipment on the vessel that is used to transmit the report required by this subpart is in operation;

(3) During periods of visibility of 2 miles or less, the radar on a vessel equipped with radar is in operation and manned; and

(4) The vessel is free of any conditions that may impair its navigation such as fire, defective propulsion machinery, or defective steering equipment.

(b) The master of a vessel shall operate the vessel in accordance with paragraph (a) of this section.

Separated traffic lanes do not exist within Rosario Strait as in the rest of the Vessel Traffic System. Due to the narrow width of Rosario Strait, a single lane has been established. "Radio equipped vessels" using Rosario Strait will be advised of the direction and speed of traffic in or entering the Strait. The VTC will coordinate vessel movements to avoid hazardous meetings or crossing situations. Masters and pilots are encouraged to adjust the speed of their vessels so as to limit movement of large vessels through Rosario Strait to one direction at a time. Under hazardous conditions such as reduced visibility or high winds, vessels may be required by the VTC to adjust time of arrival at Rosario Strait so as to limit movement of large vessels through Rosario Strait to one direction at a time.

It is anticipated that numerous crossing situations will occur at the Buoy "RA" precautionary area due to the convergence of vessels using Haro and Rosario Straits. The VTC will advise users of these potentially dangerous crossing situations.

DESCRIPTIONS AND GEOGRAPHIC COORDINATES

§ 161.180 VTS Area.

The VTS Area consists of the navigable waters of the United States inshore of the boundary line of inland waters described in § 82.120 of this chapter. This area includes the waters in the Strait

of Georgia, Haro Strait, and the Strait of Juan de Fuca that are east of the line of demarcation, and Rosario Strait, Bellingham Bay, Padilla Bay, Admiralty Inlet, Puget Sound, Possession Sound, Elliot Bay, Hood Canal, Commencement Bay, the Narrows west of Tacoma, Carr Inlet, Case Inlet, and navigable waters adjacent to these areas.

§ 161.183 Separation zones.

(a) Each separation zone is 500 yards wide and centered on a line that extends from one point to another, or through several points, described in paragraph (c) of this section.

(b) Two boundaries of each separation zone are parallel to its centerline and extend to and intersect with the boundary of a precautionary area. No part of any separation zone is contained in a precautionary area.

(c) The latitude and longitude describing the center line of the separation zone are:

- (1) Between precautionary area "S" and "SA",
 - (i) 48°12'22" N. 123°06'30" W.
 - (ii) 48°11'35" N. 122°51'55" W.
- (2) Between precautionary area "R" and "RA",
 - (i) 48°16'26" N. 123°06'30" W.
 - (ii) 48°19'06" N. 123°00'09" W.
- (3) Between precautionary area "RA" and "SA",
 - (i) 48°18'45" N. 122°57'30" W.
 - (ii) 48°12'40" N. 122°51'01" W.
- (4) Between precautionary area "RA" and "RB",
 - (i) 48°20'26" N. 122°57'01" W.
 - (ii) 48°24'14" N. 122°48'00" W.
 - (iii) 48°25'28" N. 122°46'23" W.
- (5) Between precautionary area "RB" and "SA",
 - (i) 48°25'12" N. 122°44'40" W.
 - (ii) 48°25'10" N. 122°44'12" W.
 - (iii) 48°12'52" N. 122°49'06" W.
- (6) Between precautionary area "SA" and "SC",
 - (i) 48°10'43" N. 122°47'50" W.
 - (ii) 48°07'43" N. 122°39'56" W.
 - (iii) 48°01'43" N. 122°38'02" W.

- (7) Between precautionary area "SC" and "SF",
- (i) 48°00'36" N. 122°37'24" W.
 - (ii) 47°57'21" N. 122°34'12" W.
 - (iii) 47°55'24" N. 122°30'16" W.
 - (iv) 47°53'39" N. 122°28'21" W.
- (8) Between precautionary area "SF" and "SH",
- (i) 47°52'34" N. 122°27'40" W.
 - (ii) 47°44'31" N. 122°25'41" W.
 - (iii) 47°40'18" N. 122°27'33" W.
- (9) Between precautionary area "SH" and "T",
- (i) 47°39'05" N. 122°27'42" W.
 - (ii) 47°34'54" N. 122°26'54" W.
- (10) Between precautionary area "T" and "TC",
- (i) 47°33'42" N. 122°26'33" W.
 - (ii) 47°26'53" N. 122°24'12" W.
 - (iii) 47°23'07" N. 122°21'08" W.
 - (iv) 47°19'54" N. 122°26'37" W.
- (11) Between precautionary area "CA" and "C",
- (i) 48°44'15" N. 122°45'39" W.
 - (ii) 48°41'39" N. 122°43'34" W.

§ 161.185 Traffic lanes.

(a) Except as provided in paragraph (c) of this section, each traffic lane consists of the area within two parallel boundaries that are 1000 yards apart and that extend to and intersect with the boundary of a precautionary area. One of these parallel boundaries is parallel to and 250 yards from the centerline of a separation zone.

(b) No part of any traffic lane is contained in a precautionary area.

(c) The traffic lane in Rosario Strait consists of the area enclosed by a line beginning at latitude 48°26'50" N., longitude 122°44'27" W.; thence northerly to latitude 48°36'06" N., longitude 122°44'56" W.; thence northeasterly to latitude 48°39'18" N., longitude 122°42'42" W.; thence westerly and northwesterly along the boundary of precautionary area "C" to latitude 48°39'37" N., longitude 122°43'58" W.; thence southerly to latitude 48°38'24" N., longitude 122°44'08" W.; thence southwesterly to latitude 48°36'08" N., longitude 122°45'44" W.;

thence southerly to latitude 48°29'30" N., longitude 122°44'41" W.; thence southwesterly to latitude 48°27'37" N., longitude 122° .; thence northeasterly and southeasterly along the boundary of precautionary area "RB" to the point of beginning.

§ 161.187 Precautionary areas.

The precautionary areas consist of:

(a) *Port Angeles precautionary area.* An area enclosed by a line beginning on the shoreline at New Dungeness Spit at latitude 48°11'00" N., longitude 123°06'30" W.; thence due north to latitude 48°17'10" N., longitude 123°06'30"; thence southwesterly to latitude 48°10'00" N., longitude 123°27'38" W.; thence due south to the shorelines; thence along the shoreline to the point of beginning;

(b) *Precautionary area "RA".* A circular area of 2,500 yards radius centered at latitude 48°19'46" N., longitude 122°58'34" W.;

(c) *Precautionary area "RB".* A circular area of 2,500 yards radius centered at latitude 48°26'24" N., longitude 122°45'12" W.;

(d) *Precautionary area "C".* A circular area of 2,500 yards radius centered at latitude 48°40'34" N., longitude 122°42'44" W.;

(e) *Precautionary area "CA".* A circular area of 2,500 yards radius centered at latitude 48°45'19" N., longitude 122°46'26" W.;

(f) *Precautionary area "SA".* A circular area of 3,000 yards radius centered at latitude 48°11'28" N., longitude 122°49'43" W.;

(g) *Precautionary area "SC".* A circular area of 1,250 yards radius centered at latitude 48°01'06" N., longitude 122°37'54" W.;

(h) *Precautionary area "SF".* A circular area of 1,250 yards radius centered at latitude 47°53'10" N., longitude 122°27'48" W.;

(i) *Precautionary area "SH".* A circular area of 1,250 yards radius centered at latitude 47°39'42" N., longitude 122°27'48" W.;

(j) *Precautionary area "T".* A circular area of 1,250 yards

radius centered at latitude 47°34'19" N., longitude 122°26'47" W.;

(k) *Precautionary area "TC"*. A circular area of 1,250 yards radius centered at latitude 47°19'30" N., longitude 122°27'19" W.

§ 161.188 Temporary precautionary areas.

The Commander, Thirteenth Coast Guard District, may amend the description of the TSS in §§ 161.180—161.189 of this subpart to establish temporary precautionary areas to provide for seasonal activities such as fishing that affect the safe passage of vessels in the TSS.

§ 161.189 Reporting points.

The reporting points are—

- (a) Buoy "R" at latitude 48°16'26" N., longitude 123°06'30" W.
- (b) Buoy "S" at latitude 48°12'22" N., longitude 123°06'30" W.
- (c) Buoy "SA" at latitude 48°11'28" N., longitude 122°49'43" W.
- (d) Buoy "RB" at latitude 48°26'24" N., longitude 122°45'12" W.
- (e) Buoy "C" at latitude 48°40'34" N., longitude 122°42'44" W.
- (f) Buoy "SC" at latitude 48°01'06" N., longitude 122°37'54" W.
- (g) Buoy "SH" at latitude 47°39'42" N., longitude 122°27'48" W.
- (h) Buoy "TB" at latitude 47°23'07" N., longitude 122°21'08" W.
- (i) The boundary of the TSS.

SUPPLEMENTAL REPORTING POINTS

The following Supplemental Reporting Points may be used in reports to the VTC to advise the progress of vessels through the VTS Area when they are not in the vicinity of the Traffic Lanes.

1. Abeam Carter Point, Lummi Island
2. Abeam East end of Speiden Island, San Juan Islands
3. Abeam Obstruction Island, San Juan Islands
4. Thatcher Pass
5. Abeam Cattle Point, San Juan Island
6. Abeam Shannon Point, Fidalgo Island
7. Deception Pass
8. Protection Island
9. Elliott Point
10. Abeam Possession Point, Whidbey Island
11. Hazel Point, Hood Canal
12. Agate Pass
13. Point Vashon, Vashon Island
14. Point Defiance
15. Lyle Point, Anderson Island
16. Brisco Point, Hartstene Island

APPENDIX A

SUMMARY

A. Channel 13 (156.65 MHz) is the radiotelephone frequency designated for the Puget Sound Vessel Traffic System.

The voice-call for the Puget Sound Vessel Traffic Center is: SEATTLE TRAFFIC. All times will be given in Pacific Standard Time (Zone+8) or Pacific Daylight Time (Zone+7) whichever is in effect. The 24 hour clock time system will be used. All messages originated and received by the Vessel Traffic Center (VTC) shall be in the English language.

B. INITIAL REPORT

The following information is reported to SEATTLE TRAFFIC upon transmitting the initial report at least 30 minutes before entering the VTS Area:

1. Name of vessel.
2. Position of vessel.
3. ETA and position of entry in the VTS Area.
4. Final destination and ETA.
5. Any condition on vessel that may affect its navigation.
6. Any dangerous cargo aboard.

C. FOLLOW-UP REPORT

The following information is reported to SEATTLE TRAFFIC upon transmitting the follow-up reports at least 15 minutes, but not more than 45 minutes, prior to entry into the VTS Area:

1. Name, type, length and draft of vessel.
2. Any changes to information transmitted in initial report.
3. Speed (over the ground).
4. Tug with tow maneuvering difficulties.
5. ETA and point of entry into TSS.

D. MOVEMENT REPORTS

The following information is reported whenever a vessel passes a reporting point:

1. Name of vessel.
2. Reporting point.
3. Time of passing reporting point.
4. Next reporting point.
5. ETA next reporting point.
6. Change in speed of vessel.
7. If departing the TSS: course and destination or intentions.

The reporting points are:

1. When North of New Dungeness Light (Buoy R)
2. When Northeast of Colville Point (Buoy RB)
3. When Northeast of Lawrence Point (Buoy C)
4. When abeam of New Dungeness Light (Buoy S)
5. When Southwest of Point Partridge Light . (Buoy SA)
6. When West of Double Bluff Light (Buoy SC)
7. When West of West Point Light (Buoy SH)
8. When abeam of Robinson Point (Buoy TB)
9. When at the limits of the TSS.

NOTE: If the ETA at a reporting point changes by more than 10 minutes, a revised ETA is reported.

At any time during a voyage, report additional information which could be helpful to SEATTLE TRAFFIC. This includes adverse visibility, adverse weather conditions, heavy vessel traffic and concentrations of fishing vessels.

E. FINAL REPORT

The following information is reported whenever a vessel anchors or moors in, or departs from the VTS Area:

1. Name of vessel.
2. Position.
3. Estimated time of next movement.

F. Special reports are required for ferry vessels and vessels about to enter Rosario Strait. These reports are contained in the Communication Rules (Ferry Vessels) and the Rosario Strait Rules sections of the operating manual.

APPENDIX B

PHONETIC ALPHABET

ALPHA	JULIETT	SIERRA
BRAVO	KILO	TANGO
CHARLIE	LIMA	UNIFORM
DELTA	MIKE	VICTOR
ECHO	NOVEMBER	WHISKEY
FOXTROT	OSCAR	X-RAY
GOLF	PAPA	YANKEE
HOTEL	QUEBEC	ZULU
INDIA	ROMEO	

FIGURES

In the United States, the figures one, two, three, etc. are used to the exclusion of anything else. Other systems do exist and are listed here should they be encountered in communications with foreign vessels.

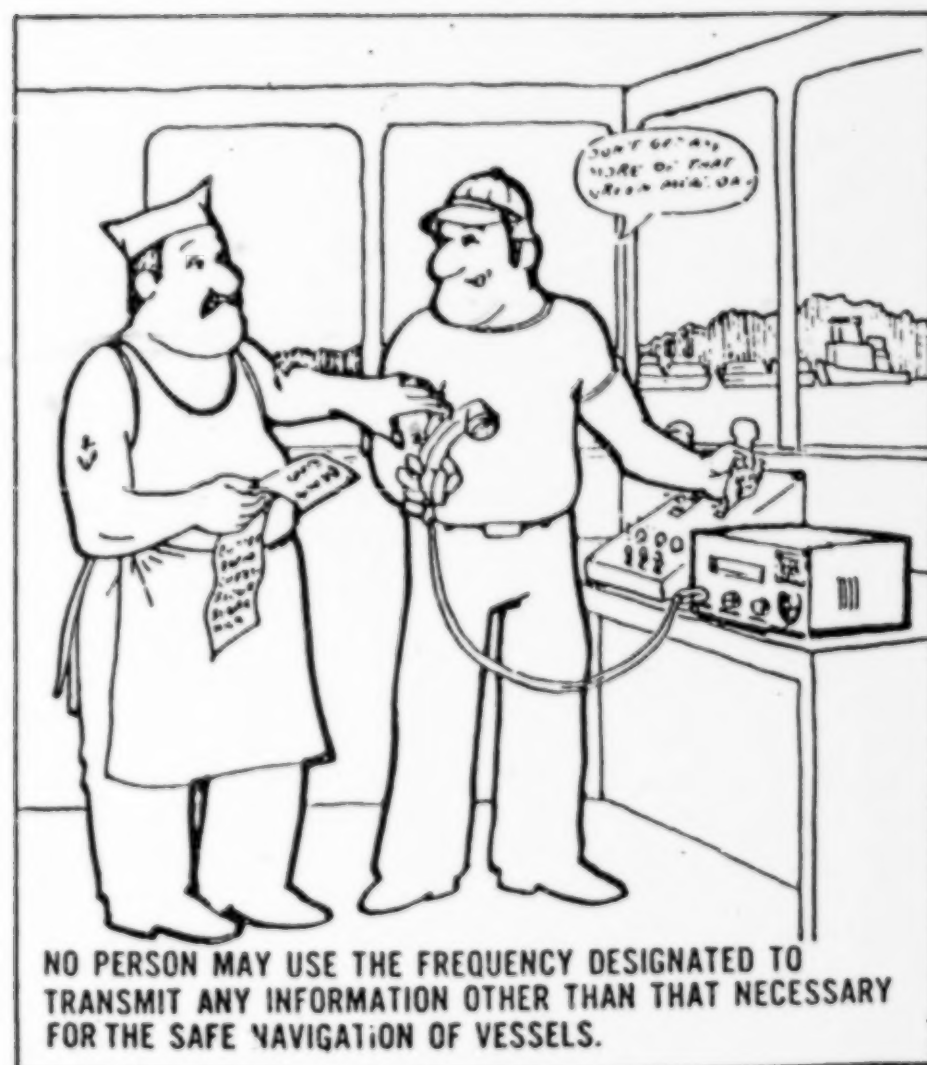
Figure	English	International
0	Zero	Nadazero
1	One	Unaone
2	Two	Bissotwo
3	Three	Terrathree
4	Four	Kartefour
5	Five	Pantafive
6	Six	Soxisix
7	Seven	Setteseven
8	Eight	Oktoeight
9	Nine	Novenine
.	Point	Decimal

APPENDIX C

SAMPLE MESSAGES

A. GENERAL

"Radio equipped vessels" are required to maintain a listening watch on the VTS working frequency, Channel 13. This is also the Bridge-to-Bridge Radiotelephone Frequency. Turning the radio set down or off defeats the very heart of the system—that being every vessel will know who/what the other vessel in his vicinity is doing. (1) Listen to the receiver before transmitting so another vessel's communication is not "broken up". (2) Use the name of the vessel being called FIRST, then your own vessel's name; DO NOT USE INTERNATIONAL CALL SIGNS. (3) Use Channel 13 only for navigational safety purposes.



B. INITIAL REPORT

A vessel is approaching Alden Bank bound for Seattle and is 30 minutes from entering the VTS Area.

Call up: SEATTLE TRAFFIC, THIS IS THE CATHERINE ELIZABETH, OVER.

Reply: CATHERINE ELIZABETH, THIS IS SEATTLE TRAFFIC, OVER.

Message: SEATTLE TRAFFIC, CATHERINE ELIZABETH, PASSED POINT ROBERTS, ENTERING VTS AREA AT 2015 ABEAM ALDEN BANK, DESTINATION SEATTLE ETA 0800, TOWING TWO GRAVEL SCOWS, OVER.

Reply: CATHERINE ELIZABETH, SEATTLE TRAFFIC, ROGER, (any traffic advisory, OVER), OUT.

C. INITIAL AND FOLLOW-UP REPORTS

1. At 1400, a vessel is about to depart the Port Angeles' pilot station bound for Seattle.

Call up: SEATTLE TRAFFIC, THIS IS THE BONNY LAD, OVER.

Reply: BONNY LAD, THIS IS SEATTLE TRAFFIC, OVER.

Message: SEATTLE TRAFFIC, BONNY LAD, FREIGHTER, 605 FT., DRAFT 32 FT., DEPARTING EDIZ HOOK 1420 ENTERING VTS AREA. DESTINATION SEATTLE ETA 1845, RADAR INOPERATIVE, NO DANGEROUS CARGO. SPEED 16 KNOTS, ETA REPORTING POINT "SIERRA ALPHA" 1500, OVER.

Reply: BONNY LAD, SEATTLE TRAFFIC, ROGER (any traffic advisory, OVER), OUT.

2. For a voyage totally within that portion of the VTS Area not served by the TSS.

Example: A vessel at Point Wells is departing en route La Conner.

Call up: SEATTLE TRAFFIC, THIS IS THE BARBARA ANN, OVER.

Reply: BARBARA ANN, THIS IS SEATTLE TRAFFIC, OVER.

Message: SEATTLE TRAFFIC, BARBARA ANN, DEPARTING POINT WELLS 1615 EN ROUTE LA CONNER. SPEED 8 KNOTS. ETA LA CONNER 2015, TOWING GAS BARGE, RADAR INOPERATIVE, OVER.

Reply: BARBARA ANN, SEATTLE TRAFFIC, ROGER, (any traffic advisory, OVER), OUT.

D. VESSEL MOVEMENT REPORT. For reporting the position of the vessel and its progress through the VTS Area while transiting the TSS. A vessel is transiting the TSS southbound for Seattle and is passing buoy "SC."

Call up: SEATTLE TRAFFIC, THIS IS THE SANDRA CORRY, OVER.

Reply: SANDRA CORRY, THIS IS SEATTLE TRAFFIC, OVER.

Message: SEATTLE TRAFFIC, SANDRA CORRY, PASSING "SIERRA CHARLIE", ETA "SIERRA HOTEL" 1643, NEW SPEED 10 KNOTS, OVER.

Reply: SANDRA CORRY, SEATTLE TRAFFIC, ROGER (any traffic advisory, OVER), OUT.

E. FINAL REPORT. For the termination of any voyage within or departing the VTS Area.

Example (1): A vessel is arriving Pier 36, Elliott Bay.

Call up: SEATTLE TRAFFIC, THIS IS THE PATRICIA ANN, OVER.

Reply: PATRICIA ANN, THIS IS SEATTLE TRAFFIC, OVER.

Message: SEATTLE TRAFFIC, ARRIVED PIER 36, 2016, OVER.

Reply: THIS IS SEATTLE TRAFFIC, ROGER, OUT.

Example (2): A vessel is passing Patos Island and is departing the VTS Area en route Vancouver, B. C.

Call Up: SEATTLE TRAFFIC, THIS IS THE JACKSON HEIGHTS, OVER.

Reply: JACKSON HEIGHTS, THIS IS SEATTLE TRAFFIC, OVER.

Message: SEATTLE TRAFFIC, JACKSON HEIGHTS PASSING PATOS ISLAND, DEPARTING VTS AREA EN ROUTE VANCOUVER, B. C., OVER.

Reply: JACKSON HEIGHTS, SEATTLE TRAFFIC, ROGER, OUT.

F. ROSARIO STRAIT REPORT. For a voyage through Rosario Strait, report is made at least 15 minutes prior to entry into Rosario Strait.

Call up: SEATTLE TRAFFIC, THIS IS THE ARCTIC MARU, OVER.

Reply: ARCTIC MARU, THIS IS SEATTLE TRAFFIC, OVER.

Message: SEATTLE TRAFFIC, ARCTIC MARU, TUG AND TOW, 300 FEET, DRAFT 9 FEET, DEPARTING ANACORTES 1400, SPEED 10 KNOTS, ETA BUOY 8 ROSARIO STRAIT 1430, EN ROUTE BLAKELY ISLAND ETA 1515, NO DANGEROUS CARGO, OVER.

Reply: ARCTIC MARU, SEATTLE TRAFFIC, ROGER, 1 MILE VISIBILITY IS REPORTED IN ROSARIO STRAIT, THE TANKER LINDA SUSAN IS NORTHBOUND WITH ETA BUOY 8 AT 1430, DO NOT ARRIVE AT BUOY 8 PRIOR TO 1440, REPORT WHEN ABEAM SHANNON POINT, OVER.

Reply: SEATTLE TRAFFIC, ARCTIC MARU, ROGER, MY
REVISED ETA BUOY 8 IS 1445, OVER.

Reply: ARCTIC MARU, SEATTLE TRAFFIC, ROGER,
OUT.

EXHIBIT Y

UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF WASHINGTON
THREE JUDGE COURT
(Parts of letterhead omitted in printing.)
STATE OF WASHINGTON
Office Of The Governor
OLYMPIA

January 21, 1976

The Honorable Gerald R. Ford
President of the United States
The White House
Washington, D.C.

Dear Mr. President:

I would like to discuss with you a problem of ever-growing concern to those of us along the Pacific Coast and Alaska. Our concern is the increasingly large numbers of petroleum tankers which are calling at ports in our states, tankers which in many cases do not reflect the latest developments in the art of tank-ship building, and which as a result present potential threats to our environment which can no longer be ignored.

With the cut off of Canadian crude oil delivery to our State, we are assured of steadily increasing tanker movements and substantial increases in volumes of crude oil moved by water, in order to keep our refineries in operation. The opening of Alaskan crude deliveries is an integral part of this problem. We can certainly accept the necessity for such movements but we also feel that everything possible should be done to insure safe passage on and through our state's inland waters in order to reduce to the absolute minimum the environmental impact of such traffic.

Maritime and Coast Guard construction standards for tank ships currently do not reflect, in all cases, the advancements which have been made in ship building. For example the Maritime Administration requires inert gas systems (primarily a ship-safety device) only on tankers of 100,000 dead weight tons (dwt.) or greater. The Coast Guard does not require double bottoms in any such vessel in spite of the fact that, by their own statistics, 27

out of 30 groundings in the last 10 years would have resulted in zero oil spillage if the vessels involved were equipped with double bottoms. Tanker builders are willing and capable of installing such safety devices but, lacking any government regulation requiring such actions, will do so only at the request of the owner.

In the State of Washington we have attempted to exercise a certain element of control over present and projected tanker movements through our tug escort bill (requiring tugs to accompany all vessels larger than 60,000 dwt. through restricted waters and banning crude tankers larger than 125,000 dwt. entirely). This concept is now being tested in federal court and the outcome is unsure, but in the meantime I would urge that all the other available options be exercised to insure minimum impact from these vessel movements.

Specifically, I urge you to direct the Coast Guard and the Maritime Administration to exercise their regulatory powers and require that all tankers be built with double bottoms, inert gas systems, segregated ballast systems, collision avoidance radar, Loran C systems and any other safety system presently available to the industry. Any vessel designed for trade where tug assistance is unavailable should also be equipped with bow thrusters. These items are thoroughly discussed in a Congressional report of July, 1975 entitled, "Oil Transportation by Tankers" prepared by the Office of Technology Assessment.

These proposals are not new; they simply require the incorporation of existing technology now, rather than permitting the agencies responsible for these procedures to continue delaying the eventual acceptance of these concepts. Costs involved in these changes are minimal, and when compared to the cost of cleaning up a major spill, are insignificant indeed. I urge prompt action in this regard.

Sincerely,
(Signed): Daniel J. Evans
Governor

DJE:dg

cc: Senator Jackson
Senator Magnuson
William T. Coleman
Secretary of Transportation
Mr. Elliot Richardson
Secretary of Commerce, Designee

Testimony of
The Honorable Daniel J. Evans
Governor of the State of Washington
to the
Committee on Commerce
United States Senate
on the
Ports and Waterways Safety Act of 1972
March 2, 1976

Mr. Chairman, Members of the Committee:

Since the signing of the Ports and Waterways Safety Act in 1972, we in Washington and the citizens of our sister States of the Pacific Coast have seen a steady erosion of its purposes, coupled with a compounding of the underlying problems it was intended to address, both occurring largely through the actions of Federal agencies. About the only good news since then is the fact that this Committee is exercising its powers of oversight, with the intent of correcting deficiencies in implementation of certain mandates established by the Act.

The Act itself is a good one. A Federal agency, the Coast Guard, in Title II is directed to develop high standards of tank vessel design, operation and reduction of oil loss in the case of accident, all of which you in Congress and we in the affected areas considered minimal steps in preparing for the huge volumes of Alaskan oil destined for West Coast ports. The Coast Guard said

all the right things, including the announcement shortly afterward (38FR2467) that it was "considering" the segregated ballast-double bottom requirement for the new Jones Act vessels in the Alaskan trade. You will recall that with the Ports and Waterways Safety Act in place, and Coast Guard seemingly prepared to implement its purposes, there was a considerable relaxation of concerns in the coastal states.

I will only briefly summarize adverse events since then affecting our own State of Washington, but I ask that you bear in mind that many of these points also apply to the other states directly involved in the oil shipments, Alaska and California, as well as to Oregon and the Canadian Province of British Columbia, whose long coastlines are just as exposed, and just as vulnerable as our own coastal and inland waterways.

After the 1973 embargo, Canada announced an end to crude exports in the mid-1980's, later moving the date up to 1980. This impacts Washington more than any other state, since all four of the major refineries historically receive the great bulk of their crude via pipeline from Canada.

Then early this year, PEA announced *and implemented* regulations for allocation of the dwindling Canadian supply to other states. Our projected cutoff now comes early next year, in 1977.

In Washington, as elsewhere in the world, we see the effect of a global surplus of tankers, most operating under foreign flags of convenience. Costs must be cut and operating standards reduced in order to secure any charter, and the vessels themselves, many designed and built speculatively, are aging quickly.

At the same time, the average size of vessels is increasing, but with comparable decreases in maneuverability and stopping capability. And even the Jones Act vessels destined for the Alaskan trade, while probably better than the world average, are in fact mostly larger replicas of old, minimum-cost designs. Many are newer, but not safer, larger and more risky in the event of any deviation from nominal transit conditions in our restricted Puget Sound waters.

Finally, and this goes to the heart of the matter, the Coast Guard has steadily retreated from its 1973 position, and has

now turned into an advocate for "economic" considerations. I am unaware that Congress had ever given them this advocacy role, and in this specific case, I ask that Congress carefully examine all their pertinent statements and actions since 1972. If it appears that Coast Guard has used those years to "buy time" for the industry it should be regulating, for example, in getting minimum-cost vessels "grandfathered" into the Alaskan oil trade, then I believe corrective action would be in order.

To some extent, the damage is done. The protection we were assured of in the 1972 act does not exist: the Alaska fleet is mostly operating, or in construction, to far lower standards of safety than I believe Congress envisioned in 1972. While Congress can, and I hope *will* correct the situation for the future, we and our sister states will have to bear the exposure and the damages which are sure to come.

I should point out that we are not opposing the use of very large *new* tankers *under certain conditions*, nor do we ask that the *present* Alaska fleet be scrapped. If the clear intent of the 1972 Act had been followed, the present fleet would be a better one, but we can prepare to live with the outcome. That is what I want to talk about now, preparing for the future.

First, obviously, Congress must ensure that the intent of the 1972 Act will be carried out *henceforth*, and that any existing obstacles to its implementation be removed, either administratively or via additional legislation.

Second, Congress should keep after the difficult, but increasingly critical problem of standards for *non*-Alaskan tankers discharging cargoes in U.S. waters. International agreements are not presently adequate because all the present incentives work the other way, and we must move unilaterally to protect our own waters and shores. The world tanker fleet is aging and deteriorating, and its owners and operators have no impetus to upgrade to the standards Congress has set out to apply to our own vessels.

Further, Congress should aid the coastal states directly, and massively in some cases, to prepare for increases and shifts in the oil and LNG trade of the country as a whole. In Washington, we can handle the regional share of the Alaskan and other oil trade with reasonable safety and reasonable economy, *if* we consolidate the terminal operations at a single point outside the more restricted and sensitive areas. If necessary, from the standpoint of national interest, we could also probably accommodate a pipeline terminal for the benefit of inland refiners in the Northern Tier states, and the resultant economies of scale would make the consolidated terminal development increasingly more feasible.

Therefore I propose to this Committee that the time has come, indeed is long past, to begin dealing with all the issues of oil and LNG traffic in U.S. waters as a *single system* in urgent need of system-wide planning and development. It begins today with this review of tanker design and operations, for both U.S. and foreign vessels, but continues directly through the issues of new ports and pipelines, spill cleanup and liability, and the relative status of the states and federal agencies in a working partnership.

We in the states cannot do it alone, and indeed it is this relatively powerless and fragmented situation which has led to creation of the uncoordinated, dangerous situation we now face. Thus as the long-awaited national energy policies begin to emerge, we turn to you for effective relief through recognition of the serious *system* deficiencies which still exist.

This leads me to a final observation concerning federal-state relationships. Over the past decade, Congress and the national Administrations have, as a matter of national policy, encouraged the states to lead in protecting our waters against degradation. I refer specifically to the Federal Water Pollution Control Acts, particularly those of 1965 and 1972, the Coastal Zone Management Act of 1972, and the Deep Water Ports Act of 1974 as examples. The State of Washington has accepted the challenges of federal policy and legislation and has enacted numerous environmental protection statutes designed to protect our waters from pollution by oil and other pollutants.

I have always viewed the Ports and Waterways Safety Act of 1972 as a solid piece of environmental protection legislation which allows the best efforts of the federal government and the states to operate in the subject area of the act. Unfortunately, and I believe contrary to the intent of Congress, the Act is being relied upon to undermine a 1975 state statute (Chapter 125, Laws of 1975, first Extraordinary Session) on the basis of "federal preemption".

This state statute prohibits very large oil tankers (over 125,000 dwt) from entering the most vulnerable part of our inland waters and requires tankers from 40,000 to 125,000 dwt to be equipped with certain safety equipment or to have a tug escort while in these local waters. This statute is sound legislation which takes a reasonable approach to achieve a needed objective. The act operates in a field which has historically been viewed as a proper area for state activity. The statute was supported by a wide range of interest groups and individuals.

I urge the Committee to examine the Ports and Waterways Safety Act of 1972 carefully as it pertains to federal-state relations. In so doing I recommend to the Committee that it reaffirm federal policy of recent times that the Act does not preempt the states in the field of water protection. The Committee should further confirm that the Act allows for the states, working in harmony with the federal government, to develop and operate natural resources protecting passages to the inland marine waters of our country.

FINAL ENVIRONMENTAL STATEMENT

(Regulations For Tank Vessels Engaged In The Carriage of Oil
In Domestic Trade, Protection of The Marine Environment —
Department of Transportation, Coast Guard)
(pp. i-vii, 1-86, 209-220)

SUMMARY

Department of Transportation	Executive Secretary
U. S. Coast Guard	Marine Safety Council
	U. S. Coast Guard (G-CMC/82)
Contact Individual	Washington, D. C. 20590
	(202) 426-1477

1. Name of Action.

(x) Administrative Action () Legislative Action

2. Description of Action.

The pollution regulations in Subchapter O of Title 33, Code of Federal Regulations, are to be amended by adding regulations governing the design and operation of certain seagoing U.S. tankships and barges certificated to carry oil in the United States domestic trade. These regulations represent one step by the Coast Guard to implement the Ports and Waterways Safety Act of 1972 (P. L. 92-340), Title II, as amended. They are based on standards adopted by the International Conference for the Prevention of Pollution from Ships, 1973, but also include constraints on the location of segregated ballast spaces required on new tankers over 70,000 deadweight tons (DWT).

3. Environmental Impact and Adverse Environmental Effects.

The discharge criteria (along with the construction features, equipment, and operating practices necessary to meet the discharge criteria) specified in these regulations will result in a substantial reduction in the amount of oil introduced to the sea from U.S. seagoing tank vessels in domestic trade. The estimated

annual oil input to the ocean from U.S. tankers in domestic trade (currently about 100,00 metric tons) will be reduced by about 80 percent as a result of these requirements with additional reductions resulting in future years as new vessels built with improved damage resistance and defensive space arrangement enter service. A much greater reduction will result from adoption of similar control measures by other countries with the adoption and entry into force of the 1973 Marine Pollution Convention. The Coast Guard hopes that extension of these standards during 1976 to U.S. vessels in foreign trade and foreign vessels entering U.S. waters will contribute toward adoption of the Convention by other countries.

It is impossible to say what impact the elimination of the oil pollution that would otherwise occur will have on the marine environment. Too little is known about the ocean system and its ability to accommodate petroleum hydrocarbon inputs. Until basic questions concerning the level of petroleum hydrocarbon input at which irreversible damage will occur can be answered it seems wisest to work for international control of inputs and push forward research to reduce our current level of uncertainty. These regulations are consistent with that goal.

These regulations should have no adverse environmental effects.

4. Economic Impact

These regulations require a number of actions to be taken by shipowners in an effort to reduce oil inputs to the oceans. These actions will require additional capital investment in vessels and equipment and will also increase operating costs. It is likely that these additional costs of doing business will be passed on to the consumer as increased transportation costs added onto the price of petroleum products. Under the most pessimistic set of assumptions, these increased transportation costs are estimated to be less than 0.2 cents per gallon. The Coast Guard has considered these costs, along with the need for regulations and the extent to which the rules being considered will contribute to safety and protection of the marine environment, and has concluded that the expenditures involved are warranted by the results expected.

5. Alternatives Considered

- a. Publish no additional regulations. (No Action)
- b. Publish regulation less stringent than those proposed.
- c. Publish regulations more stringent than those proposed, including double bottoms, additional segregated ballast requirements, and equipment intended to improve maneuvering and stopping ability.
- d. Reduction of oil consumption or reduction of oil imports.
- e. Use of a different mode of transportation for oil.

6. Comments on the draft statement were requested from the following (* indicates comments were received and are attached):

- Department of the Interior
- *Environmental Protection Agency
- *Department of Defense
- *Department of Commerce
- *Department of Transportation
- Department of State
- Sierra Club
- Connecticut Citizens Action Group
- *Center for Law and Social Policy (representing a number of groups)
- *American Petroleum Institute
- *American Institute of Merchant Shipping
- American Association of Port Authorities
- American Maritime Association
- American Waterways Operators, Inc.
- Shipbuilders Council of America
- Environmental Policy Center
- Coalition Against Oil Pollution
- *National Audubon Society

In addition, comments were received from the State of New Jersey, Department of Environmental Protection.

7. Dates statements were made available to the Council on Environmental Quality and the public:

Draft statement	28 June 1974
Final statement	15 Aug. 1975

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(Page numbers omitted in printing.)

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REFERENCES

APPENDIX A: PROPOSED RULES "TANK VESSELS IN THE DOMESTIC TRADE" PUBLISHED IN THE JUNE 28, 1974, FEDERAL REGISTER. (NOTE: These rules are provid-

ed as an aid in understanding this EIS. Final rules will incorporate changes as noted on page 228.)

APPENDIX B: CONCLUSIONS OF NATIONAL ACADEMY OF SCIENCES STUDY, PETROLEUM IN THE MARINE ENVIRONMENT

APPENDIX C: REPORT OF STUDY GROUP ON LOCATION OF SEGREGATED BALLAST

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(For index of Figures and Tables, see pp. 332-333 herein.)

1. INTRODUCTION

This statement is the U.S. Coast Guard's final Environmental Impact Statement (EIS) issued in compliance with the requirements of the National Environmental Policy Act (NEPA) of 1969, section 102(2)(C) and the Guidelines of the Council on Environmental Quality (CEQ) implementing that Act, on a regulatory proposal for additional pollution regulations, Sub-chapter 0 of Title 33, directed at seagoing U.S. tank vessels engaging in domestic trade.

This statement has been extensively revised in format and has had additional information incorporated in response to comments received on the draft EIS made available to CEQ and the public on June 28, 1974. It also reflects comments made on

the regulatory proposal itself, even though such comments were not directed at the contents of the draft statement. The reorganization and additions to the draft EIS were desirable to enhance readability and understanding of the proposed action. The draft EIS was not intended to be a complete "technology assessment" of the transport of oil at sea, but rather to be specifically responsive to the action as proposed and alternatives to that action. The proposed regulations are not a complete and comprehensive answer to all the complex problems arising from the transport of oil by ship. They are one step in a continuing process.

The statement has been expanded to include information which will permit the reader to more fully appreciate the scope and complexity of the tank vessel pollution problem. It also touches upon the present and projected studies necessary to support additional regulatory proposals concerned with aspects of the problem which have been identified but which are not considered within the scope of this action.

2. DESCRIPTION AND PURPOSE OF THE ACTION

2.1 Purpose

The purpose of this regulatory action is to effect a significant reduction in operational pollution from all seagoing U.S. tank vessels engaged in domestic trade, and to provide added protection against outflow in the case of accidents to new tank vessels in this trade. This will be accomplished by imposing additional requirements governing the design, construction, alteration, repair, and operation of these vessels, including the retrofitting of certain equipment and construction features to existing vessels. These regulations represent one step in the implementation of Title II of the Ports and Waterways Safety Act of 1972. Additional steps to be taken are outlined in Section 4.6 on page 82.

2.2 Background

Section 201 of the Ports and Waterways Safety Act of 1972 (P.L. 92-340, 86 Stat. 427) amended Section 4417a of the Revised

Statutes of the United States (46 U.S.C. 391a) to address requirements for rules and regulations for the protection of the marine environment in addition to personnel and vessel safety.

As an initial step in implementing the Ports and Waterways Safety Act, the Coast Guard published in the January 26, 1973, issue of the Federal Register (38 FR 2467), an advance notice of proposed rulemaking that invited comments from the public concerning standards for pollution abatement for new tankships constructed for trade on the navigable waters of the United States. The construction requirements concerned segregated ballast tanks, achieved in part by fitting in the cargo length a double bottom.

The advance notice was published with two purposes in mind:

1. Implementation of Section 201 of the Ports and Waterways Safety Act of 1972 (P.L. 92-340, 86 Stat. 427, 46 U.S.C. 391a(7)) to comply with the effective date mandated by Congress. This was especially important in view of the long lead time the marine industry needs for orderly planning and design engineering; and
2. Solicitation of comments from all sectors of the public. Sixty-seven written comments were received on the proposal and an evaluation of the comments was made. The comments involved much more than simple expressions of support or nonsupport. Three common areas of concern appeared with a fair degree of commonality in the comments. These were:
 - a. The high initial cost associated with double bottoms.
 - b. The need for international agreement and the danger of unilateral action.

- c. The treatment to be accorded existing foreign and domestic shipping not covered by the proposal.

In the July 5, 1973, issue of the Federal Register (38 FR 17848), the Coast Guard published a supplement to the advance notice of proposed rulemaking. This supplement explained that 46 U.S.C. 391a(7)(C), as amended, allows for the establishment of rules and regulations consonant with international treaties, conventions, or agreements. Since the International Conference on Marine Pollution was scheduled for October 1973 and since the results of the conference would have a direct bearing on implementing regulations under Section 391a(7), the Coast Guard notified the public that action under the advance notice would be withheld until after the Conference.

Pollution of the seas by oil as a result of vessel operations has been recognized as a **world** problem for some years, and pollution prevention measures have been the subject of several international agreements (for example, the International Convention for the Prevention of Pollution of the Sea by Oil, 1954, along with 1962 and 1969 amendments to that agreement). The main purpose of the international conference held in London, England, during October 1973, at which some 79 countries were represented, was for nations to agree on further measures to reduce oil pollution from tank vessels. Considerable work went into preparation for the Conference, and, on the basis of studies done in this country, the U.S. position prior to the Conference included a provision that segregated ballast, carried in part in double bottoms, should be required on vessels larger than 20,000 DWT. In spite of the U.S. delegation's efforts, this position received only token support at the Conference. The resulting International Convention for the Prevention of Pollution from Ships, 1973, (referred to in this statement as "the 1973 Marine Pollution Convention" or "the Convention") requires segregated ballast for ships over 70,000 DWT but no double bottoms. While this was considerably less than the U.S. had hoped to achieve, it is a great improvement over the requirements currently in effect for tankers. The 1973 Convention far surpasses, in both breadth of coverage and in methods of control, previous international agreements. For example, the discharge of light refined oil

products will be controlled for the first time as will a number of other previously unregulated major sources of marine pollution. The carriage of noxious liquid substances will be regulated and requirements on discharges will be imposed ranging from retention on board for disposal at shoreside reception facilities to dilution of the residue prior to discharge. In a number of respects the 1973 Marine Pollution Convention represents a significant step forward in international efforts to control marine pollution.

About the same time the Conference was ending in London, on November 16, 1973, there was a change in dates by which regulations were to be effective. Rules published pursuant to 46 U.S.C. 391a(7)(C) were now to be effective by June 30, 1974, for U.S. flag vessels engaged in coastwise trade, as a result of Section 401 of the Act of November 16, 1973 (P. L. 93-153, 87 Stat. 589).

After the Conference, the Coast Guard was faced with making a number of significant policy decisions before drafting proposed regulations. Answers to the following questions were sought:

Should the U.S. accept the standards agreed upon internationally or take unilateral action to impose higher standards on U.S. ships and foreign ships entering U.S. waters?

If we accept the Convention results for foreign ships and U.S. ships in foreign trade, need there be different standards applied to U.S. ships in domestic trade?

The following policy alternatives were available:

1. Adopt the Convention standards for all U.S. vessels and all foreign vessels entering U.S. waters.
2. Require higher standards for U.S. vessels in domestic trade.
3. Require higher standards for all U.S. vessels.

4. Require higher standards for all U.S. vessels and all other vessels entering U.S. ports.

Factors considered in selecting one of these policy alternatives included not only environmental considerations but also social, legal, economic, political, and safety factors.

Faced with a revised deadline of June 30, 1974, to have regulations for U.S. vessels engaged in coastwise trade effective, the Coast Guard considered the situation and the information available and concluded:

The 1973 Marine Pollution Convention, while not containing everything the United States would have liked, did offer potential for significant reduction in oil inputs to the world's oceans.

This reduction was a needed step and in the Coast Guard's judgment, provided an adequate level of abatement of operational pollution, at least for the immediate future, and

Regulations issued by the Coast Guard for domestic tankers should be consistent with the Convention with the view toward fully implementing the Convention for all U.S. tankers and foreign tankers entering our ports by the 1976 deadline specified in the Ports and Waterways Safety Act. (A policy, in effect, of implementing the Convention early, before it came into effect as international law.)¹

So proposed regulations were developed and, after consultation with the Environmental Protection Agency, the Maritime Administration, and others, were published in the June 28, 1974, issue of the Federal Register.

Public hearings were held on July 23 and 24, 1974, in Seattle, Washington, and on July 30 and 31, 1974, in Washington, D. C. Ninety-eight written comments were also received, which were

¹Factors considered in reaching these conclusions and reasons behind them are discussed on pages 6-10.

added to the comments on the advance notice received earlier.

Since the deadline for receipt of public comments in August 1974, the Coast Guard has been involved in analysis of those comments and in various studies and discussions to try to accommodate objections to the proposed rules expressed by members of Congress, environmental groups, and government agencies. The study of segregated ballast location discussed on page 19 and in Appendix C, page 241 and the resulting modification to the rules to specify distribution of segregated ballast spaces is one such effort. During this period the grounds for the Coast Guard conclusions stated above have also been thoroughly reviewed. The draft environmental impact statement has been revised to reflect the comments, studies, discussions, and review of decisions made earlier before the proposed rules were published.

The Coast Guard remains convinced that U.S. participation and leadership in international pollution control efforts is absolutely essential and that the approach taken in the proposed rules published June 28, 1974, was correct, even if poorly explained in the draft environmental impact statement. The final rules are, therefore, essentially the same as the proposed rules, except that requirements for distribution of segregated ballast spaces have been added to make maximum effective use of such spaces to reduce oil outflow resulting from collisions and groundings.

In developing these regulations the Coast Guard has followed the procedure outlined in Title II of the Ports and Waterways Safety Act by considering:

1. The need for regulations.
2. The extent to which proposed regulations will contribute to safety or protection of the marine environment.
3. The practicability of compliance with the regulations including cost and technical feasibility.

The need for regulations, in terms of oil inputs to the marine

environment and their effects, are discussed in Section 3, starting on page 23. The contributions the regulations will make toward reduction of oil inputs and the practicability of compliance with the rules are also discussed in Section 3. In view of the information developed and presented in Section 3, the Coast Guard has concluded:

Current levels of oil input to the marine environment are not causing serious irreversible damage, but no one is really sure how much oil the oceans can accommodate—it may be many times the current inputs or within an order of magnitude of current levels (ten times larger).

Tank cleaning and ballasting of tankers are responsible for approximately 80 percent of the oil entering the oceans from tankers and about 18 percent of the estimated worldwide input of petroleum hydrocarbons. They thus constitute the most serious threat to the marine environment due to pollution from oil tankers.

Because of tanker ownership and trade patterns and the international nature of world shipping, *international* control of oil inputs from tank cleaning and ballasting of tankers is absolutely essential.

The 1973 Marine Pollution Convention, while not achieving all that the Coast Guard would have liked, particularly in the area of accidental protection, offers the potential for effectively controlling oil inputs from tanker operations and reducing them to acceptable levels.

The Convention deserves wholehearted U.S. support and should serve as the basis for regulations for U.S. tankers and foreign tankers entering U.S. waters issued under the Ports and Waterways Safety Act of 1972.

The Coast Guard feels there are a number of good reasons why the United States should accept the provisions of the 1973 Marine Pollution Convention as a sound basis for regulatory action.

One reason is because of its effectiveness in reducing oil entering the oceans. Implementation of the Convention provisions will significantly reduce operational discharges from vessels and will also affect accidental discharges to some extent (through application of tank size, subdivision, and stability requirements). Specific details of these requirements and their effects are discussed later in this Section and in Section 3. Due to the international nature of ocean shipping and the realities of world petroleum trade, the United States, working alone, cannot make a significant impact on operational pollution — it must be a cooperative international effort.

Congress has taken specific notice of the need for international cooperation in circumstances involving worldwide environmental problems. Section 102(2)(E) of the National Environmental Policy Act directs that:

"to the fullest extent possible: * * * all agencies of the Federal Government shall — * * * recognize the worldwide and long-range character of environmental problems and, where consistent with the foreign policy of the United States, lend appropriate support to initiatives, resolutions, and programs designed to maximize international cooperation in anticipating and preventing a decline in the quality of mankind's world environment; * * *"

The wisdom of this provision pertains even where the results achieved from international cooperation are less than completely satisfactory. The important point is that where substantial improvement has been made through this cooperative process — as was achieved at the 1973 Marine Pollution Conference — the process should be supported.

There are also economic and political reasons for ratifying the Convention and implementing it in U.S. regulations. Complications arising out of unilateral action, including loss of foreign trade, retaliatory actions against U.S. shipping, and adverse effects on foreign relations, are all avoided by making our actions consistent with an already agreed-upon international course of action.

There are some additional reasons for Coast Guard optimism concerning effectiveness of the 1973 Marine Pollution Convention. The Convention contains two extremely important provisions whose significance is not widely appreciated. One of these provisions will make it much easier to bring this Convention into force than it has been to make previous international pollution prevention agreements international law. The second provision will make future amendment of the Convention's technical provisions and regulations much faster. To illustrate, the 1969 amendments to the 1954 Pollution Prevention Convention have not become international law due to the large number of nations whose ratifications are needed to bring them into force. The 1973 Convention, however, will be brought into force 12 months after ratification by only 15 nations who, between them, control 50 percent of the gross tonnage in the world's merchant fleet. This formula offers the possibility for rapid entry of the Convention into force compared to past agreements. In addition, the 1973 Convention can be amended through a tacit acceptance procedure initiated at regular meetings of permanent IMCO bodies. A special conference is not required as in the past. So it will be possible in the future to change the agreement more quickly, making it much more responsive to environmental and technological developments. Both of these features are significant steps forward in international efforts to control marine pollution.²

All of this may explain why the Coast Guard feels it is important for the United States to ratify the 1973 Marine Pollution Convention and even to use the Convention as the basis for regulations for U.S. tankers in foreign trade and foreign tankers entering U.S. waters. But why does the Coast Guard feel it is necessary to make regulations for seagoing U.S. tank vessels in domestic trade the same as the regulations for vessels engaged in foreign trade?

A number of comments critical of the Coast Guard's decision on this point were received on both the draft environmental

²For additional background and discussion on the 1973 Marine Pollution Convention see references 1, 2, and 3.

impact statement and the proposed regulations. Basically, the commenters wanted high construction standards (double bottoms in particular) for U.S. tank vessels engaged in domestic trade and could not see why the Coast Guard had not imposed such standards.

The Coast Guard feels any distinctions or differences in the regulations it issues under the Administrative Procedure Act should be based on categories or distinctions established by law, or on some safety or environmental reason for distinguishing among members of a group. In the Coast Guard's opinion neither of these conditions exists at present with respect to the measures being considered, and there is therefore no legal basis for issuing rules for U.S. tank vessels engaged in domestic trade which are different from those to be made applicable to other U.S. tank vessels and to foreign vessels entering U.S. ports.

Prior to its amendment by the Ports and Waterways Safety Act of 1972 the Tank Vessel Act (46 U.S.C. 391a) required the Commandant of the Coast Guard to establish rules and regulations to secure effective provision against the hazards to life and property created by the operation of U.S. tank vessels. The resulting regulations made no distinction between tank vessels in domestic trade and those in foreign trade. There were, however, distinctions among various classes of tank vessels based on safety reasons. These distinctions in the requirements were based on factors related to the risks associated with operation of the vessel (e.g., vessel size, exposure to rough weather, or dangerous characteristics of the cargo).

In July 1972, the Ports and Waterways Safety Act amended the Tank Vessel Act, directing that increased awareness be paid to environmental protection features of tank vessel design, construction, alteration, maintenance, and operation. The Ports and Waterways Safety Act did not establish that any distinction should be made among U.S. tank vessels on the basis of trade route. Section 201(7)(D) of the Act did state that rules must be equally applicable to U.S. vessels in foreign trade and foreign vessels trading into the United States.

If no distinction is created by law, how about a distinction on the basis of safety or environmental reasons? Once comment argued that there was a basis for such distinction:

"There is an environmental justification for applying standards to coastal traffic. Coastal tankers will tend to spend more time in ecologically sensitive waters. Thus ballasting operations may seriously damage the environment, even if low effluent levels can be achieved. Moreover, the risks of groundings and collisions are especially high for smaller coastal tankers which often enter into narrow, shallow, and crowded harbors. Special attention must necessarily be given to their maneuverability characteristics and to means to prevent or reduce outflow should accidents occur. Under such circumstances, it is manifestly unsound, from an environmental perspective, to consider that uniform standards must be applied to *all* tank vessels trading in U.S. navigable waters.³"

One problem with this argument is that "coastal traffic" is not equivalent to "domestic trade." Reference to a map of North America indicates the "domestic trade" routes from Gulf ports to the east coast of the United States traverse much the same waters as "coastal traffic" between Caribbean or Canadian ports and U.S. east coast ports. This is one major pitfall of domestic trade — foreign trade distinctions in safety and environmental protection regulations. As far as tanker operations are concerned, the discharge criteria in the regulations prohibit any discharge of oily mixtures within 50 miles of land, so ballasting operations will not seriously damage the environment in "these ecologically sensitive waters" as the comment alleges. With respect to tanker accidents, the Coast Guard has expended considerable effort in developing methods to assess the risks associated with various forms of marine transportation in order to improve regulation making efforts and to put them on a more rational basis. Risk assessment is a particularly difficult task. While intuition might lead one to conclude "the risks of groundings and collisions are especially high for smaller coastal tankers which often enter into narrow, shallow and crowded harbors," the Coast Guard has not

³Comments on draft EIS submitted by Center for Law and Social Policy, at page 16. (See page 133 of this final environmental impact statement.)

yet been able to factually support such a conclusion, nor, to our knowledge, has anyone else.

In summary, the Coast Guard does not feel an adequate case for making a distinction in the regulations between U.S. tankers in domestic trade and U.S. tankers in foreign trade on the basis of safety or environmental grounds has been established. Lacking such a basis for distinction in the regulations, or some distinction created by law, the Coast Guard feels it is legally obligated to apply the same rules to both groups of vessels.

Existing Coast Guard vessel inspection regulations use the terms "coastwise" and "coastwise routes" in a different sense than did Public Law 93-153 in moving up the date of the regulations for U.S. flag vessels engaged in coastwise trade. To avoid confusion arising out of these differing usages, the term "domestic trade" is used in this statement and in the proposed regulations to refer to "trade between ports or places within the United States, its territories and possessions, either directly or via a foreign port including trade on the navigable rivers, lakes, and inland waters."

These regulations apply to seagoing tank vessels of 150 gross tons or more. With the exception of subdivision and stability requirements applicable to vessels operating on the Great Lakes, these regulations will not affect vessels certificated by the Coast Guard for Great Lakes, Lakes, Bays and Sounds, and River routes. A different and distinctive rulemaking under development will be made applicable to these vessels. These vessels are of relatively small size (mostly under 2,000 gross tons), routinely engage in very short voyages in waters where no discharge of oil is permitted, have little need to ballast tanks, and are often engaged in "dedicated service" which minimizes the need to clean cargo tanks. The regulatory action under consideration would not be appropriate to these vessels, hence, the need for a different rulemaking.

2.3 Description of the Regulations

These regulations apply to U.S. flag seagoing tankships and

seagoing barges certificated to carry oil in domestic trade.⁴ Tank vessels certificated for Great Lakes, Lakes, Bays and Sounds, and River routes are not included in this regulatory action for the reasons discussed above. The standards to be published incorporate the provisions of the Oil Pollution Act Amendments of 1973 (P. L. 93-119, 87 Stat. 424, Oct. 4, 1973).

Definitions contained in the regulations, and repeated below, include several terms which have been used in previous regulations but not carefully defined. They are defined in these regulations to avoid ambiguity.

Provision is made in the regulations for the Coast Guard to accept an equivalent (such as alternative materials, methods, procedures, etc.) of a required design or equipment feature; however, operational methods to effect the control of discharge of oil may not be substituted as equivalent to required design and equipment features.

2.4 Definitions

1. "Length" or "L" means the distance in meters from the fore side of the stem to the axis of the rudder stock on a waterline at 85 percent of the least molded depth measured from the molded baseline, or 96 percent of the total length on that waterline, whichever is greater. In vessels designed with drag, the waterline is measured parallel to the designed waterline.
2. "Amidships" means the middle of the length.
3. "Breadth" or "B" means the maximum molded breadth of a vessel in meters.
4. "Center tank" means any tank inboard of a longitudinal bulkhead.

⁴The proposed rules, "Tank Vessels in the Domestic Trade," published in the June 28, 1974, Federal Register are reprinted in Appendix A, starting on page 228. These proposed rules are provided for reference in reading this statement. The note on page 228 summarizes the significant changes that will be incorporated in the final rules. Final rules will appear in the Federal Register about 30 days after this statement is made available to the public.

5. "Clean ballast" means the ballast in a tank which, if discharged from a vessel that is stationary into clean, calm water on a clear day, would not —
 - a. Produce visible traces of oil on the surface of the water or on adjoining shorelines; or
 - b. Cause a sludge or emulsion to be deposited beneath the surface of the water or upon adjoining shorelines.
6. "Combination carrier" means a vessel designed to carry oil or solid cargoes in bulk.
7. "Deadweight" or "DWT" means the difference in metric tons between the displacement of a vessel in water of a specific gravity of 1.025 at the load waterline corresponding to the summer freeboard and the lightweight of the vessel.⁵
8. "Lightweight" means the displacement of a vessel in metric tons without cargo, oil fuel, lubricating oil, ballast water, fresh water and feed water in tanks, consumable stores, and any persons and their effects.
9. "New vessel" means a vessel that —
 - a. Is constructed under a contract awarded after December 31, 1974⁶;
 - b. In the absence of a building contract, has the keel laid or is at a similar stage of construction after June 30, 1975;
 - c. Is delivered after December 31, 1977; or
 - d. Has undergone a major conversion for which —

⁵This is the definition for deadweight which will appear in the final rules. It is slightly different from the definition contained in the proposed rules.

⁶Contract award, keel laying, and delivery dates used in this definition are identical to the dates used in the June 28, 1974, notice of proposed rulemaking. Reasons for this are discussed on page 42.

- i. The contract is awarded after the effective date of the regulations;
 - ii. In the absence of a contract, conversion is begun after June 30, 1975; or
 - iii. Conversion is completed after December 31, 1977.
10. "Existing vessel" means any vessel that is not a new vessel.
11. "Major conversion" means a conversion of an existing vessel that —
 - a. Substantially alters the dimensions or carrying capacity of the vessel;
 - b. Changes the type of the vessel;
 - c. The intent of which, in the opinion of the Coast Guard, is substantially to prolong the vessel's service life; or
 - d. Otherwise so alters the vessel or a portion of the vessel that the vessel is no longer considered by the Coast Guard to be an existing vessel.
12. "From the nearest land" means from the baseline from which the territorial sea of the United States is established in accordance with international law.
13. "Instantaneous rate of discharge of oil content" means the rate of discharge of oil in liters per hour at any instant, divided by the speed of the vessel in knots at the same instant.
14. "Oil" means petroleum in any form including oil, sludge, oil refuse, and refined products.
15. "Oil fuel" means any oil used as fuel for the propulsion and auxiliary machinery of the vessel in which it is carried.
16. "Oily mixture" means a mixture with any oil content.

17. "Permeability of a space" means the ratio of the volume within a space that is assumed to be occupied by water to the total volume of that space.
18. "Segregated ballast" means the ballast water that is introduced into a tank which is completely separated from the cargo oil and oil fuel system and which is permanently allocated to the carriage of ballast.
19. "Slop tank" means a tank specifically designated for the collection of cargo drainings, washings, and other oily mixtures.
20. "Tank" means an enclosed space that is formed by the permanent structure of a vessel, and designed for the carriage of liquid in bulk.
21. "Tank barge" means a tank vessel not equipped with a means of self-propulsion.
22. "Tank vessel" means a vessel that is specially constructed or converted to carry liquid bulk cargo in tanks and includes tankers, tankships, tank barges, and combination carriers when carrying oil cargoes in bulk.
23. "U.S. vessel" means a vessel that is owned, documented, or registered in the United States and is not a public vessel.
24. "Wing tank" means a tank that is located adjacent to the side shell plating.
25. "Tankship" means a tank vessel propelled by mechanical power or sail.
26. "Domestic trade" means trade between ports or places within the United States, its territories and possessions, either directly or via a foreign port including trade on the navigable rivers, lakes, and inland waters.

2.5 Discharge Criteria

Seagoing vessels of less than 150 gross tons must retain on board any oily mixtures or transfer them to a reception facility. (Clean ballast and segregated ballast may be discharged overboard.) Seagoing vessels of 150 gross tons or more must discharge oil mixtures overboard in accordance with the criteria

outlined below, or retain the oily mixture on board, or transfer the oily mixture to a reception facility. The use of chemicals to treat an oily mixture to circumvent the discharge requirements is not allowed.

An oily mixture from a cargo tank may be discharged into the sea if a tank vessel complies with all of the following:

1. Is more than 50 nautical miles from the nearest land;
2. Is proceeding en route;
3. Is discharging at an instantaneous rate of oil content not exceeding 60 liters per nautical mile;
4. Does not discharge a total quantity of more than 1/15,000 for an existing vessel or 1/30,000 for a new vessel of the total quantity of cargo that the discharge formed a part; and
5. Has in operation the required oil discharge monitoring and control system.

An oily mixture from a machinery space bilge, except cargo pump rooms, may be discharged into the sea, unless combined with an oily cargo mixture, if the tank vessel complies with all of the following:

1. Is more than 12 nautical miles from the nearest land;
2. Is proceeding en route;
3. Is discharging an effluent with an oil content of less than 100 parts per million; and
4. Has in operation the required oil discharge monitoring and control system or the required oily water separating equipment.

Oil-water separating and filtering equipment will be required on new and existing tank vessels. These devices will be used for oily bilge water and ballast water from oil fuel tanks. All discharges of effluent from the cargo spaces of a tank vessel will be required to go through a monitoring and control system which

will ensure that any oil discharge is automatically stopped when the oil content of the effluent exceeds that permitted by the discharge criteria. The monitoring and control system must be fitted with a recording device to provide a continuous permanent record of the oil content of the effluent. All of this equipment is essential in practicing the improved LOT system for shipboard handling cargo oil. The proposed regulations require such equipment; but the installation of the equipment will not be required until after the effective date of regulations publishing specifications, testing, labeling and approval procedures for the equipment. The detailed specifications of these systems and equipment are under development. (Refer to page 48 for additional discussion.)

Relief from the discharge criteria is given in those cases where safety of the vessel, saving of life at sea, or accidental damage to a vessel or its equipment is involved; except if the owner, master or person in charge acted either with intent to cause damage, or recklessly and with knowledge that damage would probably result.

New tank vessels will not be allowed to put ballast water in oil fuel tanks.

An important feature of these new rules is the changes they make in the definitions of the terms *oil* and *oily mixture* used in the regulations. Under the old definitions, based on the Oil Pollution Act of 1961 (33 U.S.C. 1001-1015), *oil* is limited to crude oil, fuel oil, heavy diesel oil, and lubricating oil. An *oily mixture* is presently defined as a mixture containing over 100 parts per million of oil. Under these definitions the discharge of so-called "non-persistent" oils (such as gasoline and other refined products) is not prohibited, even inside the 50 mile prohibited zone. The new definitions, paralleling those in the Federal Water Pollution Control Act, as amended, (P. L. 92-500) and the 1973 Marine Pollution Convention, cover petroleum in any form, including oil, sludge, and oil refuse, and in any quantity. Thus, the criteria in the new regulations are applicable to a much wider range of discharges than are those presently in force.

These regulations will change the requirements for entries in the Oil Record Book both for tank vessels and for ships other than tank vessels. On tank vessels entries must be made whenever the following operations take place:

1. Loading of oil cargo;
2. Internal transfer of oil cargo during voyage;
3. Opening or closing before and after loading and unloading operations of valves or similar devices which inter-connect cargo tanks;
4. Opening or closing of means of communication between cargo piping and seawater ballast piping;
5. Opening or closing of ships' side valves before, during and after loading and unloading operations;
6. Unloading of oil cargo;
7. Ballasting of cargo tanks;
8. Cleaning of cargo tanks;
9. Discharge of ballast except from segregated ballast tanks;
10. Discharge of water from slop tanks;
11. Disposal of residues;
12. Discharge overboard of bilge water which has accumulated in machinery spaces while in port, and the routine discharge at sea of bilge water which has accumulated in machinery spaces;
13. The discharge of oil or oily mixture from a ship for the purpose of securing the safety of the ship, preventing damage to the ship or cargo, or saving of life at sea; or,
14. The escape of oil, or of oily mixture, resulting from damage to the ship or unavoidable leakage; or,
15. Accidental or other exceptional discharges or escapes of oil from tankers or ships other than tankers.

Ships other than tankers will now be required to make entries in the Oil Record Book when operations 13, 14, or 15 above take place.

The discharge controls now in effect are discussed here for comparison to the new regulations. The Oil Pollution Act of 1961, as amended, established certain prohibited zones within which discharges of oil or oily mixtures with an oil content greater than one hundred parts per million (ppm) by tankers over 150 gross tons are prohibited. It also prohibits these same discharges by ships other than tankers, over 500 tons in gross tonnage, within any of the prohibited zones, except when the ship is proceeding to a port not provided with adequate facilities for the reception of these oily mixtures. Such discharges are to be made as far as practicable from land. The prohibited zones as established are defined as all areas within 50 miles from the nearest land, subject to extensions made in accordance with the terms of the 1954 Convention and published in 33 CFR 151. Ships of 20,000 gross tons or more, built after May 18, 1967, are prohibited from discharging oil or an oily mixture anywhere in the oceans except when, in the opinion of the master, special circumstances make it neither reasonable nor practicable to retain the oil or oily mixture on board. In this situation, a discharge is permitted outside of a prohibited zone. Discharges prohibited by the Convention do not apply when a discharge is made for the purpose of securing the safety of the ship, preventing damage to a ship or cargo, or saving life at sea, nor do the prohibitions apply to the escape of oil or oily mixture resulting from damage to a ship or unavoidable leakage, nor to the discharge of residue arising from the purification or clarification of fuel oil or lubricating oil provided such discharge is made as far from land as practicable. The prohibitions also do not apply to the discharges from the bilges of a ship of an oily mixture containing no oil other than lubricating oil which has drained or leaked from machinery spaces.

Regarding the present Oil Record Book requirements, this book must contain entries whenever any of the following operations takes place in the ship:

1. Ballasting of and discharge of ballast from cargo tanks of tankers;
2. Cleaning of cargo tanks of tankers;
3. Settling in slop tanks and discharge of water from tankers;
4. Disposal from tankers of oily residues from slop tanks or other sources;
5. Ballasting, or cleaning during voyage, of bunker fuel tanks of ships other than tankers;
6. Disposal from ships other than tankers of oily residues from bunker fuel tanks or other sources;
7. Accidental or other exceptional discharges or escapes of oil from tankers or ships other than tankers.
8. The discharge of oil or oily mixture from a ship for the purpose of securing the safety of the ship, preventing damage to the ship or cargo, or saving of life at sea; or,
9. The escape of oil, or of oily mixture, resulting from damage to the ship or unavoidable leakage; or,
10. The discharge of residue arising from the purification or clarification of fuel oil or lubricating oil; or,
11. The discharge of oil or oily mixture from a ship of 20,000 gross tons or over for which the building contract is placed on or after May 18, 1967, including a tanker.

2.6 Proposed Design Requirements

2.6.1 Segregated Ballast

A new tank vessel of 70,000 tons deadweight or more must be designed with segregated ballast tanks. The combined capacity of the segregated ballast tanks must be of sufficient size that the vessel can operate safely without recourse to the use of oil tanks for water ballast. To ensure sufficient capacity of the ballast tanks the following draft and trim design criteria are applied to the vessel:

- a. The molded draft amidships (dm) in meters without taking into account any vessel deformation may not be less than:

$$dm = 2.0 + 0.02L$$

- b. The trim by the stern in association with draft amidships (dm) may be no more than 0.015L.
- c. The minimum allowable draft at the after perpendicular is that which is necessary to obtain full immersion of the propeller(s).

Ballast water may be carried in a cargo tank during abnormally severe weather if more ballast water than can be carried in segregated ballast tanks is required for the safety of the vessel. This ballast water must be processed and discharged in compliance with the discharge criteria and an entry recorded in the Oil Record Book.

The rules proposed June 28, 1974, have been changed to include in the final rules a requirement for distribution of segregated ballast spaces. Segregated ballast spaces must be distributed between the cargo tanks and the vessel's hull or between cargo wing tanks along the shell plating of the vessel in accordance with the criteria detailed in a new Appendix C

included in the final regulations.⁷ The distribution of segregated ballast capacity is not specified by the 1973 Marine Pollution Convention. Study has shown that distribution or required ballast space can be beneficial in mitigating the effects of collision or stranding accidents. The degree of effectiveness of such spaces depends on a number of factors discussed in Appendix C of this statement along with the criteria for distributing ballast spaces. Calculations verifying the vessel meets the criteria for distribution of segregated ballast spaces must be submitted to the Coast Guard for review.

2.6.2 Pumping, Piping and Discharge Arrangements

A pipeline for the discharge into the sea of an effluent that is in compliance with the discharge criteria must terminate on the open deck or on the vessel's side above the waterline in the deepest ballast condition. Existing vessels which carry some segregated ballast will not be required to modify pump room piping to enable them to discharge *segregated ballast* above the waterline in the deepest ballast condition. In the case of new vessels, an additional piping arrangement may be allowed by the Coast Guard to discharge segregated ballast and clean ballast below the waterline while the vessel is in port or at an offshore terminal.

The proposed regulations will require a manifold be located on the weather deck on each side of the vessel for connection to reception facilities in order to transfer dirty ballast water or oil contaminated water.

A new tank vessel must also have a designated area on the weather deck or above that is (a) located so that the pipeline terminations and the manifold referenced above may be visually observed; and (b) equipped with either a means to directly stop the discharge of effluent into the sea or a positive communication system, such as a telephone or radio, between the observation area and the discharge control position.

⁷These criteria are described on page 241 in Appendix C, Report of Study Group on Location of Segregated Ballast, which gives details on the study which developed them and the text to be included in the final regulations.

Further, a tank vessel must have a fixed piping system designed to allow the transfer of dirty ballast residue and tank washings from a cargo tank into a slop tank.

2.6.3 Slop Tanks

New tank vessels of less than 70,000 DWT and all existing tank vessels must have at least one slop tank. A new vessel of 70,000 DWT or more must have two slop tanks. It is the Coast Guard's intention that, on an existing tank vessel, a cargo tank may be used as the required slop tank so long as the necessary piping modifications are made. A slop tank must have the capacity to retain slop from tank washings, oil residues, and dirty ballast residues, but the total capacity may not be less than three percent of the oil capacity of this vessel except two percent of the oil capacity of the vessel will be accepted if (1) there is the required amount of segregated ballast space or (2) educators that use water in addition to the washing waters are not fitted. Each slop tank must be designed with a separate inlet and outlet. It is the Coast Guard's intention to allow slop tanks to be used to carry cargo on the loaded leg of a voyage, since they are not required for treating oily mixtures during that time.

2.6.4 Oily Residue Tank (Sludge)

A tank vessel of 400 gross tons or more must have a tank that receives and holds oily residue resulting from purification of fuel and lubricating oil and oil leakages in machinery spaces. This sludge tank must have an adequate capacity that is determined by the type of machinery installed on the vessel and the maximum fuel oil capacity. Each oily residue tank on a new tank vessel must be designed to facilitate cleaning and transfer of residue to a reception facility.

2.6.5. Cargo Tank Arrangement and Size

The Oil Pollution Act Amendments of 1973 revised the Oil Pollution Act, 1961 (75 Stat. 402, 33 U.S.C. 1001 et seq.). In Section 2(5) of the new Act, it is required that tankers built in

the United States after the effective date of the section be built in compliance with Annex C of the 1971 Amendments to the International Convention for the Prevention of the Pollution of the Sea by Oil, 1954. Annex C to the 1971 Amendments is concerned with tank arrangement and maximum size. In accordance with the Act, tankers built before the effective date of Section 2(5) are required to be in compliance within two years after that date if the delivery of the tanker is after January 1, 1977, or if delivery is before January 1, 1977, and the building contract is placed after January 1, 1972, or when there is no building contract and the keel is laid or the tanker is at a similar stage of construction after June 30, 1972. The effective date of Section 2(5) is the date of enactment or the date the 1971 amendments to the 1954 Convention, as amended, are ratified or accepted with the advice and consent of the Senate of the United States, whichever is the later date. As of the date of this statement, ratification has not occurred.

Cargo tank size limitations are carried into the proposed regulations with the effective dates specified in Public Law 93-119. The change in dates affects existing vessels as defined in the definition section. The requirements of cargo tank arrangement and size apply to (1) new tank vessels, (2) tank vessels delivered after January 1, 1977, and (3) existing tank vessels: (a) delivered after January 1, 1977; or (b) delivered before January 1, 1977, and for which the building contract is awarded after January 1, 1972; or in the case where no building contract exists, the keel is laid or the vessel is at a similar stage of construction after June 30, 1972.

Cargo tanks must be of such size and arrangement that:

- a. The hypothetical outflow for side damage or for bottom damage anywhere within the length of the vessel must not exceed 30,000 cubic meters or $400\sqrt{\text{DWT}}$, whichever is greater, limited to a maximum of 40,000 cubic meters.
- b. The volume of wing and center cargo tanks must be less than the allowable volumes.

- c. The length of cargo tanks must be less than the allowable length.

The hypothetical and maximum hypothetical outflows, allowable volumes and allowable lengths are calculated in accordance with Appendix A of the proposed regulations.

2.6.6. Subdivision and Stability

The following damage stability criteria will be imposed on new tank vessels:

- a. The final waterline, taking into account sinkage, heel and trim, must be below the lower edge of any opening through which progressive flooding may take place.
- b. In the final stage of flooding, the angle of heel due to unsymmetrical flooding is not to exceed 25 degrees, except that this angle may be increased to 30 degrees if no deck edge immersion occurs.
- c. The stability in the final stage of flooding is to be investigated and may be regarded as sufficient if the righting lever curve has a range of at least 20 degrees beyond the position of equilibrium in association with a maximum residual righting lever of at least 0.1 meter.

Calculations demonstrating compliance with the damage stability criteria must be submitted to the Coast Guard for review.

Loading and damage assumptions must be made before the damage stability criteria can be applied. These assumptions are detailed in Appendix B of the proposed regulations. The loading assumptions specify that the vessel be floating at any operating draft which reflects an actual partial or full load condition, consistent with trim and strength of the vessel. Appendix B requires that the extent and character of the assumed side or bottom damage, defined in Appendix A, must be applied, except longitudinal bottom damage within 0.3L from the forward

perpendicular must be assumed to be the same as that for side damage. The damage is applied to all conceivable locations along the length of the vessel with some exceptions regarding the engineroom for smaller vessels. Details for handling damage involving a transverse bulkhead, damage between transverse bulkheads spaced less than the extent of assumed damage, damage involving stepped bulkheads and damage within which pipes, ducts and tunnels are situated are also specified. These proposed regulations will require that the master be provided with information which has been approved by the Coast Guard, which when followed, will ensure that the vessel will comply with the damage stability requirements.

Appendix A of the regulations details damage assumptions for longitudinal, transverse; and vertical extent for use in determining the hypothetical outflow in both side damage and bottom damage cases. The detail calculations for hypothetical outflow are then specified along with some special assumptions if double bottoms or double sides are fitted. Incentive in the nature of credit on outflow is allowed for arrangements incorporating double bottoms and/or double sides.

Included as part of the cargo tank arrangement requirements are special provisions for ensuring the segregation of cargo tanks from each other through the use of valves or similar devices in piping systems running through the tanks. These special provisions are to reduce oil outflow in case of damage.

Cargo tank size limitation is the only section of the design requirements in the proposed regulation which is not totally new. This section was enacted by reference in the Oil Pollution Act of 1973 (P.L. 93-119); however, it does not become effective until the 1971 amendments to the 1954 Convention have been ratified by the United States.

3. PROBABLE IMPACT OF THE PROPOSED ACTION ON THE MARINE ENVIRONMENT

3.1 The Need for Regulations

The desirability of reducing the occurrence and effects of oil pollution is accepted by nearly everyone. Increasing concern during the last several years over the possible effects of petroleum hydrocarbons in the marine environment has resulted in a number of studies and in the passage of new laws aimed at reducing oil pollution. This concern has also been expressed in terms of goals for eliminating or reducing oil pollution such as that contained in IMCO Assembly Resolution A.237(VII) (October 12, 1971): "The complete elimination of intentional pollution by oil and other harmful substances and the minimization of accidental discharges of such substances * * * by 1975 if possible, but certainly by the end of the decade."

Many of the results and pronouncements to the public by experts on the possible effects of oil in the marine environment have been conflicting; some have been alarming; most have been difficult for laymen to evaluate and put in perspective.⁸

Recognizing the need for a comprehensive review of the state of knowledge in this area, the Ocean Affairs Board of the National Research Council—National Academy of Sciences organized a workshop on the inputs, fates, and effects of petroleum in the marine environment which was held in May 1973. Background papers were reviewed and discussed by some 60 scientists and engineers from academic, governmental, and industrial organizations, both U.S. and foreign. Based on the results of this workshop and additional information developed in the intervening period, the National Academy of Sciences published a report in January 1975 entitled, *Petroleum in the Marine Environment*.

The Coast Guard believes that this report represents the best collective judgement of experts in the various fields of science and

⁸There have been some widely publicized claims that the ocean is rapidly becoming irreparably contaminated by oil spills. For example, Jacques Cousteau has stated that 40 percent of all life in the sea has been eliminated by man's activities. (Reference 4)

engineering concerned and that the report forms a sound basis for judgements concerning the need for pollution prevention measures. Because the NAS report makes available to the public in a concise form much detailed information on the fates and effects of oil in the marine environment, the Coast Guard believes no attempt need be made to duplicate such information and analysis here in this impact statement.⁹

Section 5 of the NAS report, containing the conclusions reached, is included in Appendix B of this impact statement. The following statements quoted from that material are particularly relevant.

The fate of most petroleum spills on the sea appears to be a combination of evaporation and decomposition in the atmosphere plus oxidation by chemical and biological means to CO₂. The heavier fraction of petroleum forms pelagic tar. The total amount of petroleum on the open sea in the form of specks and floating lumps is estimated to be less than a year's input. Some fraction of this amount eventually becomes washed up on beaches and incorporated into coastal sediments. It is this portion of spilled oil that causes most public complaints. Tar masses are appearing in increased quantity in formerly unpolluted areas such as the East Coast of Africa, the beaches of southern France, and many islands in both the Indian and Atlantic oceans. Recent reports clearly document the quantity and nature of these tar residues in areas such as Bermuda. The fact that these tars frequently have inclusions of paraffinic wax such as that originally formed on tanker compartment walls and that they have much higher iron contents than natural petroleum is evidence that most of these materials originate from tanker washings and bilge discharges, rather than diffused sources of petroleum input or seeps.

When oil becomes incorporated in coastal sands protected from the weathering effects of sun and oxygen, its residence time may be measured in years or decades. Unless steps are taken to reduce the input to a level that can be assimilated through natural degradation processes, we will all have to reconcile ourselves to oil-contaminated beaches.

⁹The report is available from the National Academy of Sciences Printing and Publication Office, 2101 Constitution Avenue, N.W., Washington, D.C. 20418 at \$6.50 per copy.

Fish do not appear to suffer from oil spills as much as seabirds and benthic organisms. Fish may acquire an oily flavor from feeding on oil-contaminated organisms, and widespread tainting of fish flesh may persist as long as significant quantities of oil are present. A long-range hazard exists for some birds such as auks and penguins because they have such slow reproductive rates that marked increases in mortality may be causing their gradual elimination.

The most damaging, indisputable adverse effects of petroleum are the oiling and tarring of beaches, the endangering of seabird species, and the modification of benthic communities along polluted coastlines where petroleum is heavily incorporated in the sediments. The first two of these effects occur predominantly from discharges and spills of tanker and ship operations. The toxicity and smothering effect of oil caused mortality in all major spills studied, with pelagic diving birds and intertidal to subtidal benthic organisms being most affected. Mortality was greatest where oil spills were confined to inshore areas with abundant biota. The effects were generally quite localized, ranging from a few miles to tens of miles, depending on the quantity of petroleum involved.

In general, much more research regarding the fates and effects of petroleum hydrocarbons in the marine environment is needed. We know that the quantity of floating tar in the open ocean and of tar along coastlines has been increasing, that major spills and localized continuous discharges of petroleum hydrocarbons have damaged various species of marine life, and that low levels of petroleum may affect the behavior patterns of certain species. Studies to date indicate that areas polluted with petroleum hydrocarbons "recover" within weeks or years (depending on local conditions and the characteristics of the petroleum); however, composition of the local biological communities may be altered. The oceans have considerable ability to purify themselves by biological and chemical actions. A basic question that remains unanswered is, "At what level of petroleum hydrocarbon input to the ocean might we find irreversible damage occurring?" The sea is an enormously complex system about which our knowledge is very imperfect. The ocean may be able to accommodate petroleum hydrocarbon inputs far above those occurring today. On the other hand, the damage level may be within an order of magnitude of present inputs to the sea. Until we can come closer to answering this basic question, it seems wisest to continue our efforts in the international control of inputs and to push forward research to reduce our current level of uncertainty.

To estimate as accurately as possible the amount of petroleum hydrocarbons entering the marine environment, a panel of experts from various professional disciplines was assembled as part of the NAS effort. Best estimates were developed for each significant petroleum source based on the limited reliable data available and modified by judgement based on experience. Table 1, taken from the NAS report, summarizes estimates of inputs from all significant petroleum sources. These sources range in type from extremely diffuse sources to occasional major point sources of variable location such as tanker accidents. The report points out that the importance or significance of a particular source depends not only on its relative size, but also on the nature of the source and the scope and degree of possible effects.

The figures in Table 1 indicate "Transportation" sources contribute approximately 35 percent (2.113/6.113) of the total ocean inputs. Jumping ahead for a moment, to the more detailed estimates of oil inputs from tankers presented in Table 4, tankers contribute about 22 percent (1.35/6.113) of the worldwide total. Approximately 18 percent (1.087/6.113) of the worldwide total is from tanker tank cleaning and ballasting.

The problem of oil pollution from tank vessels is a very complex one. While a number of factors are known, many aspects are unknown. As with any complicated problem, the answer should come easier if it is approached systematically. In this case, that means gathering information about oil pollution from tank vessels, analyzing the information to understand the problem as well as possible, and then developing regulations which are responsive to the problems.¹⁰

This is a continuous process. As more is learned, improved solutions will be forthcoming. Action cannot be postponed until all the facts are known. But, on the other hand, the problem must be understood well enough that the regulations are worth the cost and help achieve the goal.

¹⁰Of course, the Coast Guard is not the only one working on solutions, nor are regulations the only way to achieve improvements.

The hazards to the marine environment created by tanker oil pollution may be categorized as those due to:

routine, long-term injection of oil into the world's oceans;

fairly frequent, but low level introduction of oil into a specific locality such as around an oil terminal or harbor;

relatively infrequent catastrophic large spills concentrated in a relatively small geographic area.

Table 1. Budget of Petroleum Hydrocarbons Introduced into the Oceans

Source	Input Rate (mta) ^a	
	Best Estimate	Probable Range
Offshore production	0.08	0.08-0.15
Transportation		
LOT ^b tankers	0.31	0.15-0.4
Non-LOT tankers	0.77	0.65-1.0
Dry docking	0.28	0.2-0.3
Terminal operations	0.003	0.0015-0.005
Bilges, bunkering ^d	0.5	0.4-0.7
Tanker accidents	0.2	0.12-0.25
Nontanker accidents	0.1	0.02-0.15
Coastal refineries	0.2	0.2-0.3
Atmospheric rainout ^c	0.6	0.4-0.8
Coastal municipal wastes	0.3	—
Coastal, nonrefining, industrial wastes	0.3	—
Urban runoff	0.3	0.1-0.5
River runoff	1.6	—
SUBTOTAL	5.513	
Natural seeps	0.6	0.2-1.0
TOTAL	6.113	

^amta, million metric tons annually.

^bLOT is an abbreviation for "Load-on-top".

^cBased upon assumed 10 percent return from the atmosphere.

^dFor all ships equivalent to an average loss per ship of about 10 tons per annum.

Source: National Academy of Sciences Report, *Petroleum in the Marine Environment*, Washington, D.C., 1973, page 6.

These risks are not all the same. The environmental impact in each case depends on a great many factors, including size, frequency, and locality of oil input, oil type, oceanographic conditions, meteorological conditions, turbidity, season, biota types present, and methods of spill cleanup. The "risk" or expected loss depends not only on the damage that will result from some oil input, but on the likelihood of that input occurring. At present, no systematic method of assessing and comparing these various risks is available. Much of the information needed to determine the risks and impacts of spills has not been developed. There is no way of comparing, for example, the risks associated with the oil entering the ocean from routine tank cleaning to those connected with some smaller amount spilled as a result of a tanker grounding concentrated in a relatively small geographic area.

Ideally, pollution prevention regulations should be aimed directly at reducing risk of environmental damage. However, since direct assessment of such risks is not possible, the Coast Guard feels that highest priority must be placed on bringing the largest volume of oil inputs under control. Tank cleaning and ballasting of tankers are responsible for approximately 80 percent of the oil entering the oceans from tankers and about 18 percent of the worldwide total.¹¹

Because of tanker ownership and trade patterns and the international nature of world shipping, the Coast Guard has concluded that *international* control of oil inputs from tank cleaning and ballasting of tankers is absolutely essential. The 1973 Marine Pollution Convention, while not achieving all that the Coast Guard would have liked, particularly in the area of accidental protection, offers the potential for effectively controlling oil inputs from tanker operations and reducing them to acceptable levels. In the Coast Guard's judgement, the Convention deserves wholehearted U.S. support and should serve as the basis for regulations for U.S. ships and foreign ships entering U.S. waters issued under the Ports and Waterways Safety Act of 1972.

¹¹Tanker accidents contribute some 15 percent of the tanker total and about 3 percent of the world total.

3.2 Oil Inputs to the Oceans from Tankers

An understanding of oil inputs to the marine environment from tankers is needed before the impact of these regulations can be assessed. Information on the tank vessel population, how tank vessels are utilized, and how this utilization may contribute to oil pollution is presented below.

In this statement the term *tanker* has been used to refer generally to all vessels carrying oil cargoes in bulk, both ships and barges. There are about 6,300 tankships in the world today, ranging from small harbor and coastal tankers to very large crude oil carriers of up to 500,000 deadweight tons. There are currently about 230 active U.S. tankships of 1,000 gross tons or more. To meet anticipated future needs, there were, as of January 1, 1975, 1,118 vessels of 12,000 tons deadweight and above on order worldwide. Averaging nearly 160,000 tons deadweight in size, this fleet of about 176 million tons capacity was almost equal in carrying capacity to the existing world fleet of tankers (about 250 million tons). However, the demand for tankers has decreased as a result of a sharp drop in the growth of world oil consumption due to four-fold price increase by cartel countries last year. This has led to a surplus of tonnage, layups of idle tankers, and cancellation of orders for new tankers. Almost no new orders for large tankers were placed during the last 6 months of 1974; about 40 contracts (totaling 9 million tons deadweight) were cancelled as a direct result of tanker market conditions. (6)¹² The number, size and type of new ships built in the future depends on a great number of factors including energy policy, oil imports, economic conditions, development of U.S. deepwater ports, the tanker market, and the effect of Maritime Administration subsidy program on U.S. tanker construction. Table 2 provides additional information on U.S. and world tankship fleets.

¹²Numbers in () refer to references listed on pages 225-227.

TABLE 2. U.S. and World Tank Ship Fleets Existing and on Order as of December 31, 1973
(Ocean-going Vessels 2000 Gross Tons and Over)

Deadweight Tonnage	Existing				Under Construction or on Order			
	Worldwide		U.S.		Worldwide		U.S.	
	No.	Deadweight*	No.	Deadweight*	No.	Deadweight*	No.	Deadweight*
Under 20,000	1,566	18.2	95	1.3	173	1.5	0	0
20,000 to 70,000	1,893	70.5	198	6.5	301	11.2	39	1.7
Over 70,000	1,104	168	19	1.8	779	170	23	3.4
Total	4,563	257	312	9.6	1,253	183	62	5.1

*Deadweight in million deadweight tons.

Source: Sun Oil Company, *Analysis of World Tank Ship Fleet, December 31, 1973*, St. Davids, Penna. 19067.

Tank barges have been used to carry oil for many years on our inland river system, and larger seagoing barges are now used to transport oil on coastwise and ocean routes. As of January 1, 1974, there were approximately 350 tank barges certified by the Coast Guard for ocean and coastwise routes. These ranged in size from 150 deadweight tons up to about 35,000 deadweight tons and 600 feet in length. The large integrated tug-barge combinations now entering service operate much as tankships do, washing tanks underway and ballasting cargo tanks on ballast voyages. More conventional seagoing towed-barge operations do not involve washing tanks at sea or ballasting cargo tanks.

Total world oil production in 1973 was approximately 2,800 million metric tons (7). Of this total, an estimated 1,400 million tons of crude oil and 290 million tons of products were transported by sea in the 6,000 tank vessels mentioned above.

Tankships and barges may be broken down into two groups according to how they are used — those that carry crude oil from where it is produced to where it is to be refined, and those that carry petroleum products from refineries to terminals and distribution points. These are not fixed groups — vessels may shift from one trade to another as transportation requirements change. The current patterns of tanker utilization have evolved over the years as a result of prevailing trade patterns, economic factors, and refinery locations.

In general, larger tankers (over 100,000 deadweight tons) are used for carrying crude oil and smaller tankers (under 40,000 DWT) are used to transport refined products. Intermediate sized ships (40,000 DWT-100,000 DWT) are often used to carry either crude oil or residual fuel oils resulting from the refining process. The U.S. flag tankship fleet makes up only a small fraction of the world fleet, and, in general, U.S. tankers are smaller and older. New tank vessels, added to the U.S. fleet as a result of the Merchant Marine Act of 1970, have countered this trend to some degree. Most of the U.S. flag tankship fleet is engaged in transportation of crude oil or refined products on domestic routes (protected from foreign competition) or to the U.S. from the Caribbean or other nearby foreign areas. A small number of recently built large tankers are used to carry crude oil in world

trade. A number of these vessels will be used to carry crude oil from Alaska to the U.S. once the Trans-Alaska Pipeline is completed. Estimates of vessel requirements and vessels available for this service are shown in Appendix D.

Since current patterns of tanker utilization have evolved as a result of world trade patterns, economic factors, and refinery locations, changes in these variables will result in new patterns of tanker utilization. Such factors as location of new refineries and reduction of oil imports will influence transportation patterns. No attempt has been made in this statement to predict such factors or their effects on tanker utilization.

Information on the shipment of oil into U.S. ports during 1972 is presented in Table 3. Crude oil and residual fuel movements have been lumped together in Table 3 since they represent similar problems as far as shipboard pollution control measures are concerned.

TABLE 3. Transportation of Oil by Water into U.S. Coastal Ports¹

Cargo	Source	Shipment On	Estimated Amount (mta) ²
Crude oil and residual fuel	Foreign	Foreign Ships ³	186
Crude oil and residual fuel	Foreign	U.S. Ships ³	10
Crude oil and residual fuel	U.S.	U.S. Ships	62
Crude oil and residual fuel	U.S.	U.S. Barges	7
Refined oil	Foreign	Foreign Ships ³	23
Refined oil	Foreign	U.S. Ships ³	1
Refined oil	U.S.	U.S. Ships	79
Refined oil	U.S.	U.S. Barges	19
TOTAL			387

¹Amounts are for calendar year 1972 and are taken from U.S. Army Corps of Engineers, *Waterborne Commerce of the United States*, 1972.

²mta, million metric tons per year.

³The assumption has been made that 95 percent of the oil from foreign sources is transported in foreign flag ships and 5 percent in U.S. flag ships.

It is important to understand how tankers contribute to oil inputs. Figure 1 shows one way the tanker oil pollution problem may be broken down — according to source.¹³

Tankers contribute to the oil entering the marine environment in four basic ways:

- a. tank cleaning and ballasting
- b. tanker bilges pumped overboard and bunkering spills
- c. spills during loading and unloading of cargo at terminals
- d. tanker accidents

No one knows exactly how much oil enters the ocean from each of these sources. A number of estimates have been made. These estimates vary widely depending on the choice of assumptions and the information available concerning:

amount of oil retained on board after discharge of cargo ("clingage")

number of tanks washed

oil content of water discharged

amount of oil leaked to bilges

quantities of dirty machinery lube oil and purifier sludge produced

cargo handling spills

spills due to tanker accidents

Uncertainties concerning information on such factors makes

¹³The Coast Guard has already implemented regulations affecting some portions of the problem. Regulations for vessels and oil transfer facilities contained in 33 CFR 154-156 are aimed primarily at spills occurring at the vessel-terminal interface during transfer operations, although they also require storage and transfer facilities on vessels for oil bilge water. Requirements for bridge-to-bridge radiotelephone and development of vessel traffic systems are aimed at reducing vessel accidents.

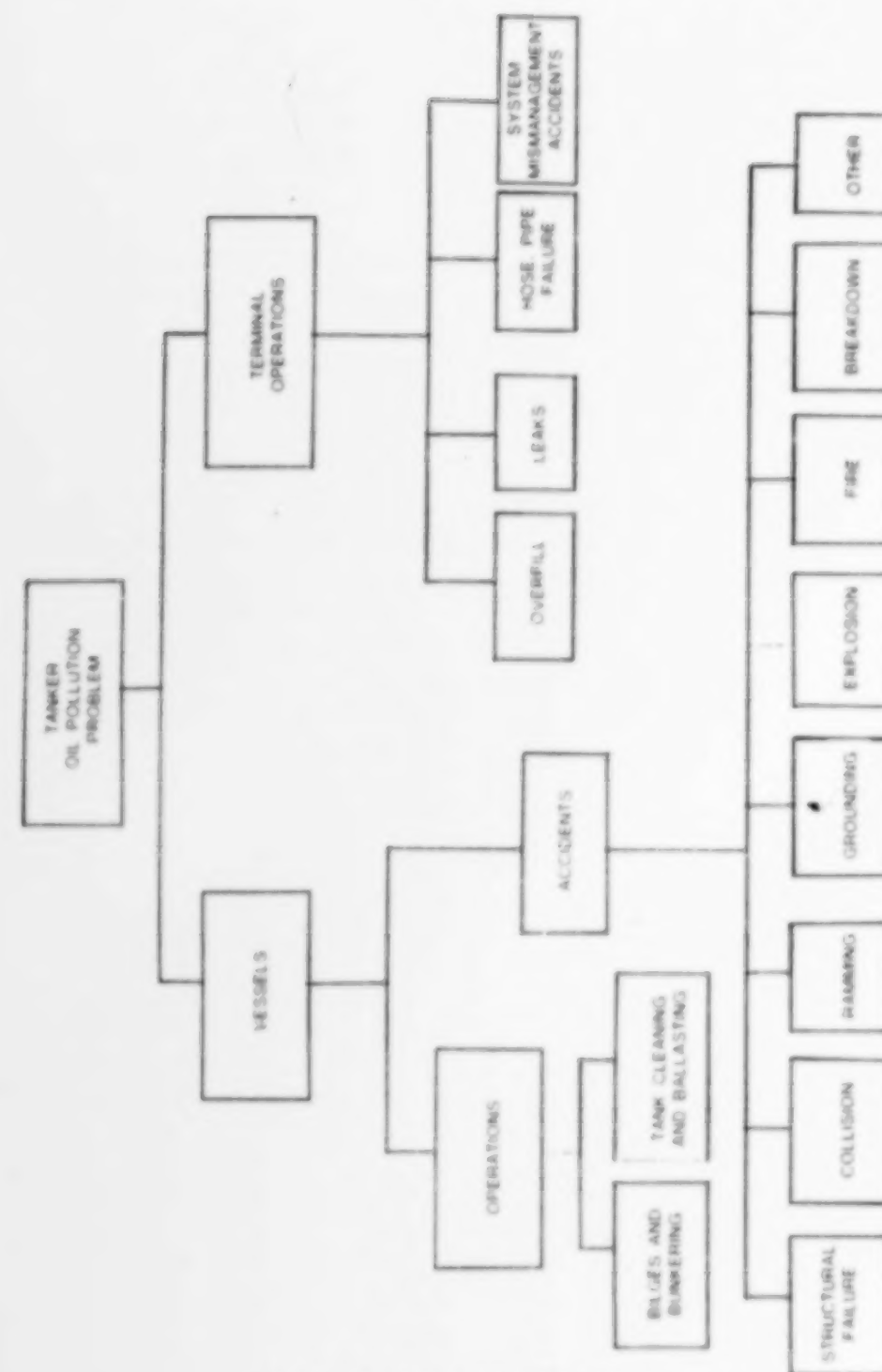


Figure 1. The Tanker Oil Pollution Problem

responsible estimates hard to make. But such estimates are necessary to give some idea of the impact of new regulatory requirements. In response to comments on the draft statement, an effort has been made in Table 4 and Figure 2 to estimate oil inputs from various tank vessel sources. Supporting assumptions and calculations are in Appendix E.

The detailed geographic distribution of these oil inputs over the oceans is not known. Obviously, tank washings and oily bilge water are pumped out along tanker routes. Cargo handling spills occur at terminals. The majority of tanker accidents resulting in oil outflows occur at or near harbors in coastal waters (within 50 miles of land). (Reference 4)

The NAS Report (Reference 5 and Appendix B) summarizes past work on determining distribution of oily residue in the ocean. More current efforts are described in reference (9) including a program being conducted by Exxon Corporation under sponsorship of NOAA and MARAD for collecting and analyzing water samples along selected tanker routes.

TABLE 4. Estimated Annual Oil Inputs to the Oceans from Tankers

SOURCE	Estimated Oil Inputs (Thousands of Metric Tons Per Year)			
	U.S. Vessels			U.S. Waters
	Worldwide	Foreign Trade	Domestic Trade	
Tank cleaning and ballasting				
Ballasting and deballasting operations including associated tank washing, crude oil ⁽¹⁾	426	3	24	29
Tank cleaning for removal of sludge buildup, crude oil ⁽¹⁾	259	1.8	16	19
Tank cleaning of refined product tankers for ballast and to insure purity of next cargo	162	0.5	43	44
Tank cleaning prior to shipyard repairs	240	1.8	7.2	9
SUBTOTAL FOR TANK CLEANING AND BALLASTING	1,087	7.1	90.2	101
Tanker bilges and bunkering	60	0.6	2.3	3
Terminal operations	3	0.02	0.4	0.6

Table continued on next page

TABLE 4. (Cont'd) Estimated Annual Oil Inputs to the Oceans from Tankers
Estimated Oil Inputs
(Thousands of Metric Tons Per Year)

SOURCE	U.S. Vessels		U.S. Waters	
	Worldwide	Foreign Trade	Domestic Trade	U.S. Ships
Tanker accidents				
Breakdowns	6		1	0.5
Collisions	40		0.4	
Explosions	20			
Fires	1			
Groundings	50	0.6	0.8	2.4
Rammings	3		0.3	0.5
Structural Failures	70		6 ⁽²⁾	1.2
Other (including flooding of machinery space)	10			
SUBTOTAL FOR TANKER ACCIDENTS	200	0.6	8.5	2.5
TOTAL OIL INPUTS FROM TANKERS	1,350	8.3	101.4	111.7

NOTES:

1. For U.S. vessels and U.S. waters, figures shown include those from both crude oil and residual oil. Crude and residual oils have been treated together because presently available LOT methods work for both.
2. Total loss of a 29,950 deadweight ton vessel is included.
3. Estimates for operational pollution inputs are described in Appendix 2.
4. Estimates for tanker accidents are based on period 1969-1973 with data collected from Lloyds Weekly Casualty Reports, CG pollution and vessel casualty reports.

Exhibit X

Exhibit X

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SOURCES OF THE ESTIMATED 1.35 MILLION TONS OF
OIL ENTERING THE OCEANS EACH YEAR FROM
TANKERS

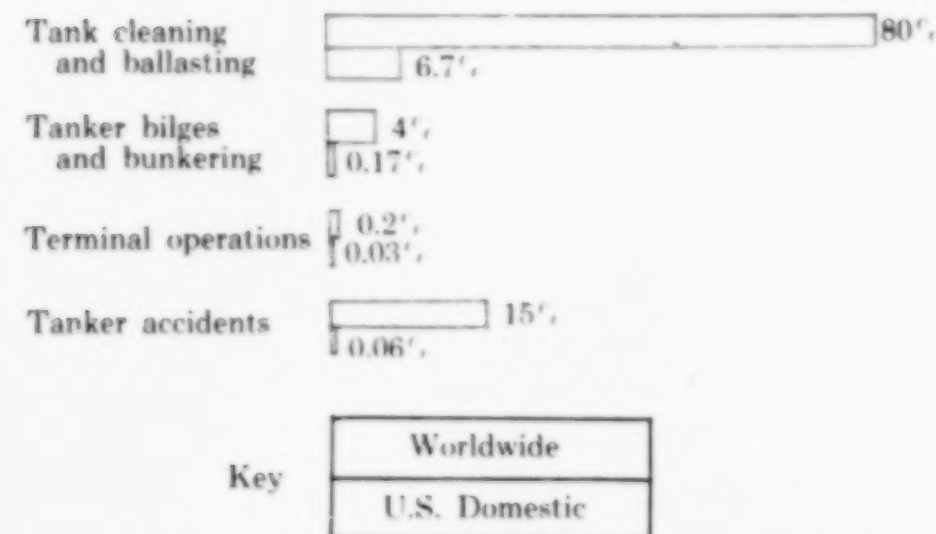


Figure 2. Sources of the estimated 1.35 million tons of oil entering the oceans each year from tankers. (Based on data in Table 4.)

The Marine Pollution Monitoring Pilot Project, part of the Integrated Global Ocean Station System (IGOSS) Program, sponsored by the United Nations' Intergovernmental Oceanographic Commission of UNESCO and the World Meteorological Organization, is also described in reference (9).

Tank Cleaning and Ballasting

Tank cleaning and ballasting accounts for approximately one million metric tons of the estimated six million tons of oil entering the marine environment from all sources each year. (Bilges contribute another 60,000 tons, terminal operations 3,000, and tanker accidents 200,000 — See Table 4.) The following description of tank cleaning and ballasting operations will help in understanding how this occurs.

After discharging cargo, a tank vessel without sufficient segregated ballast tanks will take some sea water aboard in her

cargo tanks to ensure proper propeller immersion and to provide handling and sea-keeping characteristics. The amount of ballast taken aboard depends upon the anticipated weather conditions, the distance and route of the ballast voyage, the vessel's lightship displacement (weight), length to depth ratio, and other vessel characteristics. The amount of ballast taken aboard generally varies from 20 to 50 percent of the vessel's total cargo carrying capacity, but may be greater during periods of severe bad weather.

The ballast that is put directly into cargo tanks immediately after cargo discharge comes into contact and mingles with the oil that adhered to the tank surfaces and remained below the suction bellmouths and in the piping after cargo discharge. This oily ballast must be disposed of in some way prior to arrival at the loading port unless the loading port has suitable reception capability. After disposal of the oily ballast, clean ballast suitable for direct disposal into the harbor at the loading port must be taken aboard. In the absence of segregated ballast tanks, empty cargo tanks must be washed to remove the residue oil and provide space for the clean ballast. These tank washings are pumped overboard and the clean tanks are filled with sea water which can be discharged into the harbor at the loading port. The number of tanks washed is a function of the particular vessel's proportions, the weather, the route, and the need to periodically clean tanks for internal inspection, repair at a shipyard, or to control sludge buildup. This generally amounts to between one-third and one-half of the vessel's tanks per ballast voyage. This operation is referred to in this section as "uncontrolled ballast discharge." It results in all of the oil residue from the cleaned tanks and approximately 15 percent of the oil residue from the tanks which were initially ballasted being pumped overboard. The amount of oil influx that results from this operation on any given voyage depends on the amount of oil that remains in the tanks after discharge at the unloading port. This number is commonly referred to as clingage. Clingage ranges from 0.1 percent to 0.9 percent of the cargo capacity depending on the type of oil, the stripping capability of the tanker, the particular cargo piping arrangement, and the internal structure of the tank vessel; it is considered to average 0.4 percent for crude oil.

All tank vessels do not pump the oil residue from their tank cleaning operations directly overboard. With the practice of the "load on top" (LOT) system, the tank cleaning residue (water and oil) is pumped into a holding tank. Here the mixture is allowed to settle and the water drawn off the bottom so that only oil and a small amount of water remains in the tank. These consolidated slops are then transferred to a reception facility or combined with the next cargo; hence, the term "load on top."

If all tank vessels employed a 100 percent efficient LOT system 100 percent of the time, tank cleaning and ballasting operations would not be a significant source of oil pollution. However, LOT is not being practiced by all tank vessels; where it is, it is estimated to be 90 percent efficient. This is because:

- a. the LOT system has not been used by tank vessels in the nonpersistent and special oil product trade. Reasons offered for not doing so are unwillingness to mix refined products with one another and problems associated with disposal of this type slop;
- b. certain ballast voyages can be so short as to preclude the time necessary for satisfactory operation of the LOT systems;
- c. depending on sea conditions, the necessary separation process may not be completely effective;
- d. the oil-water interface in the holding tank cannot be accurately determined and this results in a portion of the layer of oil being drawn off the water; and
- e. some components of oil are water soluble.

Oil from tank cleaning and ballasting represents about 80 percent of the oil entering the oceans from tankers; tanker bilges and bunkering, cargo handling spills, and tanker accidents are responsible for the other 20 percent.

Tanker Bilges and Bunkering Spills

The amount of oil lost to the sea from this source is difficult to support by means of measured data. The estimates in Table

4 come from reference (5) and are based on an assumed loss per ship of about 10 tons per year for machinery leakage and spills during bunkering.

Cargo Handling Spills

The amount of oil lost to the water as a result of cargo handling spills depends on the number of cargo transfers and the measures taken to avoid such spills. The estimate of 3,000 tons per year from this source in Table 4 is taken from reference (5).

Tanker Accidents

Tanker accidents are responsible for about 15 percent of the quantity oil inputs to the marine environment from tankers. But this input often occurs in a dramatic, concentrated, striking way. Because of this, accidental pollution has received more attention and public comment than some of the other sources. Estimates in Table 4 are based on references (1) and (4). Tanker accidents are discussed at greater length in Section (4) of this statement.

3.3 Effect of the Regulations on Tanker Oil Pollution

3.3.1. Requirements

For purposes of analyzing their effect on oil pollution from tankers, the regulations discussed in Section 2.3 may be broken down into the following groups.

1. Segregated ballast (157.09)¹⁴
2. Cargo residue discharge standards and requirements for equipment to retain oily residues on board.
 - Pumping, piping, and discharge arrangements (157.11)
 - Designated area (157.13)
 - Slop tanks in vessels (157.15)
 - Cargo and ballast system information (157.23)

¹⁴The numbers in () refer to specific regulations. Refer to reprint of the June 28, 1974, proposed rules contained in Appendix A starting on page 223.

Discharges; seagoing vessels of 150 gross tons or more (157.29)

Discharge of cargo residue (157.37)

Instruction Manual (157.49)

3. Bilge discharge standards

Oily residue tank (157.17)

Water ballast in oil fuel tanks (157.33)

Machinery space bilges (157.39)

4. Cargo tank arrangement and size (157.19)

5. Subdivision and stability (157.21)

3.3.2. Factors Influencing Effects of Regulations

The sea is a complex system and our knowledge of it is imperfect. Much remains to be learned before we can fully assess the impact of varying amounts of pollution of the sea by oil and answer the question, "At what level of petroleum hydrocarbon input to the ocean might we find irreversible damage occurring?" (5) Because of this, it is not possible to say directly what effect these regulations will have on the environment. But action to control and reduce the amount of oil entering the marine environment is clearly prudent until uncertainties over fates and effects of oil are reduced. While the effect of the regulations on environmental quality cannot be assessed, estimates of the effect of the regulations on oil inputs from U.S. tankers can be made.

Figure 3 shows inputs to the process of estimating the effects of the regulations.

Some of these inputs are known or can be estimated (for example, the requirements of the regulations and oil inputs). In view of current economic conditions and energy conservation efforts, considerable uncertainty is involved in predicting amount and route of future oil transport and numbers and sizes of future new ships constructed.

Because of these uncertainties, no time-phased prediction of future effects is possible, but a reasonable idea of the effects can be obtained by determining the direction of change (reduction or addition to oil inputs) and estimating magnitude of effect from recent past experience.

Estimated Effects

These rules cover only U.S. vessels, so they will affect only oil inputs from U.S. vessels.¹⁵

While these rules are applicable only to vessels in domestic trade, the prospect of their extension to vessels in foreign trade and the benefits of standardized design and series production in ship construction mean that all new U.S. vessels will be built to these standards once they become effective, whether they are intended initially for foreign or domestic trade. Applicability of the various requirement groups to U.S. tankers is shown in Table 5.

It is obvious from Table 5 that some provisions of the regulations will start to take effect soon after they are adopted and others will be longer-term, influencing the amount of oil inputs as newer ships enter service and older ships are retired. Segregated ballast is an example of the latter. The problem of setting dates for the definition of "new vessel" is essentially one of balancing the need for regulations to take effect against the effect that short lead times will have on completed designs and existing contracts. In this case the Coast Guard feels that the previous notices have provided ample notification to industry of the impending regulations and that the dates selected are therefore not unreasonable.¹⁶

¹⁵In order to comply with Title II of the Ports and Waterways Safety Act of 1972, similar rules will be made applicable to U.S. vessels in foreign trade and foreign vessels entering U.S. ports in 1976.

¹⁶The alternative of applying segregated ballast to existing vessels is discussed on pages 61-62.

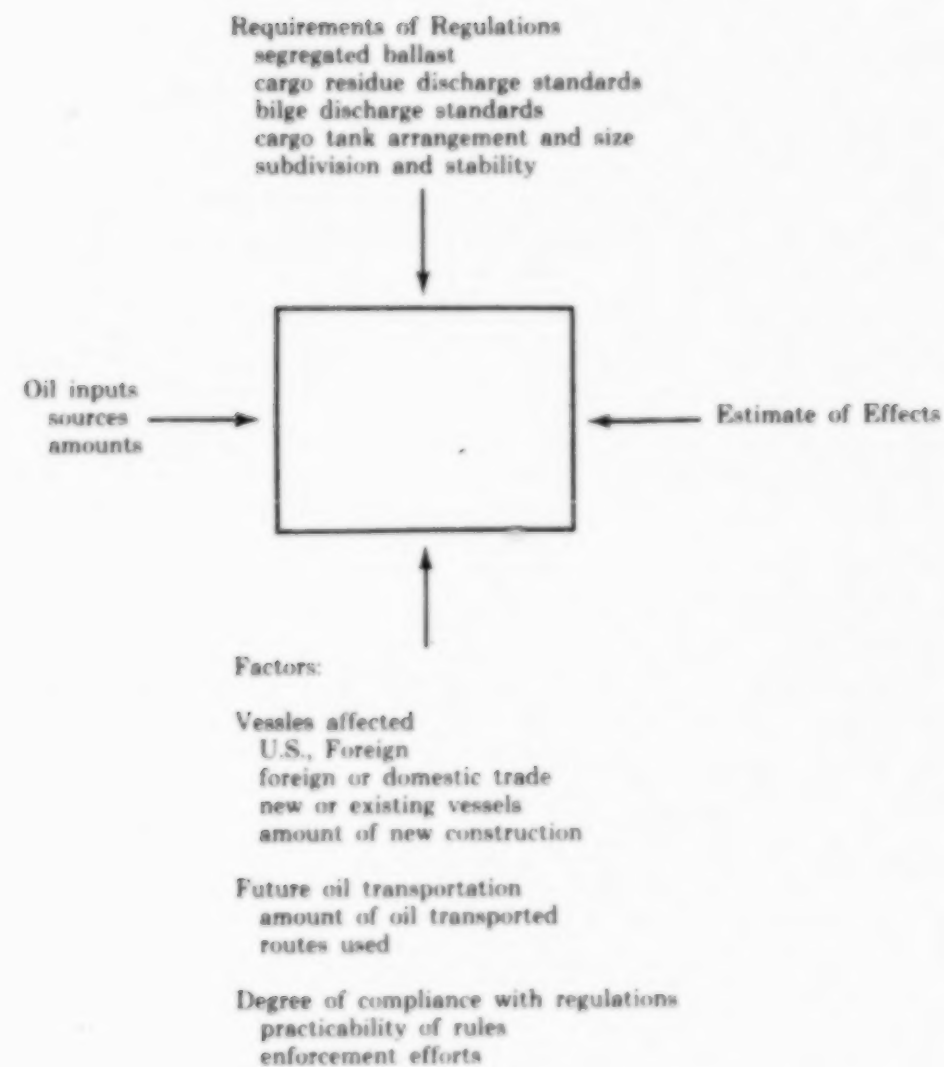


Figure 3. Inputs for estimating effects of regulations

TABLE 5. Applicability of Requirements to U.S. Tankers in Domestic Trade

Requirement	Existing Vessels	New Vessels ¹
Segregated ballast	157.09	Yes (over 70,000)
Cargo residue discharge standards Pumping, piping, & discharge arrangements	157.11	Yes
Designated area	157.13	Yes
Slop tanks in vessels	157.15	Yes
Cargo & ballast system information	157.23	Yes
Discharges; seagoing vessels over 150 gross tons	157.29	Yes
Discharge of cargo residues	157.37	Yes
Bilge discharge standards Only residue tank	157.17	Yes (over 400 gross tons)
Water ballast in oil fuel tanks	157.33	Yes
Machinery space bilges	157.39	Yes
Cargo tank arrangement and size	157.19	Some ²
Subdivision and stability	157.21	No ³

¹New vessels" are vessels whose construction is contracted for after June 30, 1975.

²This regulation applies to vessels whose construction was contracted for after January 1, 1972.

³Tankers built in the United States since 1968 have met these requirements.

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Segregated ballast on new tank vessels greater than 70,000 DWT should practically eliminate oil inputs from tanker ballasting and associated tank washing for clean ballast from these vessels. The full effect will depend on future U.S. ship construction. As Table 4 shows, segregated ballast offers the potential of much more significant savings worldwide when segregated ballast standards are adopted by other countries.

The *cargo residue discharge standards*, which are applicable immediately to all existing U.S. tankers in domestic trade as well as to new tankers, will significantly reduce inputs from all of the tank cleaning and ballasting sources listed in Table 4. The regulations apply to oil in any form including non-persistent oils and prohibit any discharge of oily mixtures from cargo residues within 50 miles of land.

The effect of the regulations will be to require that existing vessels and new vessels be equipped to utilize the improved LOT system.^{16a} Vessels which presently utilize LOT will have to upgrade to an improved method, one with better monitoring and control techniques. Vessels which do not presently use LOT will have to:

- a. use improved LOT during a ballast voyage retaining on board that which cannot be discharged
- b. transfer residues to a reception facility

To get some idea of the effect of these requirements on oil inputs, if U.S. vessels, tankships in domestic trade used improved LOT, discharging the maximum allowable 1/15,000 of their cargo over 50 miles from land, oil inputs for the quantities transported in 1972 would be as shown in Table 6.

The realization of the reductions in Table 6 depends on (1) availability of shoreside facilities for reception of cargo residues where they cannot or are not mixed with next cargo and dirty ballast tank washings where LOT techniques cannot be used, (2)

^{16a}LOT refers to "load-on-top." See page 39 for a description of LOT operations.

installation and use of oil content monitors and interface detectors to make LOT operations more effective, and (3) enforcement of the discharge standards.

TABLE 6. Comparison of Oil Inputs from Tank Cleaning and Ballasting U.S. Tankships in Domestic Trade

Amounts Presently Permitted versus New Discharge Standard Estimated Amount (Thousands of Metric Tons)		
Source	Present (Table 4)	Permitted by Discharge Standards
Ballasting and tank washing for clean ballast, crude and residual	24	4.1
Tank cleaning for sediment control, crude and residual	16	
Tank cleaning, refined product carriers for clean ballast and cargo purity	43	5.3
Tank cleaning prior to shipyard repairs	7.2	0.3
TOTALS	90.2	9.7

Increased retention of dirty ballast and tank washings where cargoes not amenable to LOT procedures are transported, will increase the need for shoreside oily residue reception facilities. A number of questions on the availability and environmental effects of shore reception facilities to take care of oily ballast, tank cleaning residue, and oily bilge water currently dumped at sea need to be answered:

Are adequate reception facilities available?

How will additional required reception facilities be provided?

Can these facilities be provided and wastes disposed of in an environmentally sound fashion?

The Coast Guard is working now with other government agencies and appropriate segments of the marine industry to assemble and update information on the adequacy of reception facilities. Some information on existing reception facilities is available (10), and an additional survey of such facilities at terminals in the U.S. is being conducted. The requirement for additional reception facilities will depend on numbers and routes of ships entering loading ports, and the U.S. is fortunate, in this case, to be an importer rather than an exporter of crude oil. Reception facility design and capacity will also depend on the type of oil and amount left on board after cargo discharge. A study conducted by Exxon before the 1973 Marine Pollution Convention (11) and on EPA study on clean products (12), represent the major works in this area.

If additional facilities are required, they will presumably be provided by terminal operators, port authorities, or ship repair yards. Limitations on trade into a port or other restrictions may have to be made to induce terminals, port authorities, or shipyards to invest in the necessary facilities.

Experience with present facilities seems to indicate that waste waters can be satisfactorily treated, although additional improvements in treatment plants will probably be required as states and local jurisdictions upgrade their discharge standards.

Load-on-top (LOT) procedures have been used by many of the world's tanker operators for a number of years. Their effectiveness depends on careful stripping and flushing of cargo tanks and lines, careful sounding of slop tanks to locate the oil/water interface, and close visual observation of the overboard discharge to determine when discharge should be stopped. The discharge criteria contained in the regulations and the 1973 Marine Pollution Convention are based on results achievable with somewhat improved LOT methods. More careful attention to slop tank and piping design and use of instruments to more accurately determine oil content of overboard discharges and location of oil/water interface in slop tanks improve the effectiveness of the

LOT techniques that have been used in the past. They make it easier to do a better job.

At least one oil content monitoring device suitable for use on tankers is commercially available and has been installed on a number of ships. The Convention requires oil content monitors and interface detectors be approved by the national administration (by the U.S. Coast Guard in our case) and the Coast Guard is developing specifications for monitors, interface detectors, and oily water separators which will be published for public comment as rapidly as possible. It is not possible to give a firm date for publication of regulations on this equipment. Work has been underway over the past year on development of test specifications and steps to provide equipment test facilities. The Coast Guard has been working with appropriate facets of the U.S. Marine industry and other government agencies and also with the Marine Environmental Protection Committee of IMCO. The Coast Guard feels that regulations must be based on facts and that developing and carefully testing good specifications is essential. Once specifications have been published and devices tested and approved, an assessment can be made as to a reasonable deadline for mandatory installation and use of the equipment. While oil content monitors and interface detectors will make LOT easier and more effective, the improvement is small compared to the much larger improvement resulting from a tanker operator's commitment to use LOT methods at all. It is important therefore to go ahead with regulations establishing discharge criteria which require that LOT (or more properly, retention-on-board) techniques be used.

The effectiveness of LOT techniques depends largely on the training and dedication of the shipboard operator. Enforcement of the standards will depend on oil record book entries, oil content monitor traces, audits of slops delivered to terminals and aerial surveillance. Under the 1961 Act, it is possible for oil record books to be falsified. The proposed regulations should help cure this problem, as oil record book entries can be tied to ship's navigation position. The expanded oil record book will account for all oil received, discharged and internally transferred. Greater specificity

of information entered and tank-by-tank information requirements will greatly facilitate efforts in detecting violations of the regulations.

The *bilge discharge standards* allow oily mixtures from machinery space bilges containing up to 100 ppm of oil to be discharged outside of 12 miles from shore. Laws already in effect require that discharges within 12 miles of land must not leave a visible sheen. Discharges must be made through an oily water separator or an oil discharge monitoring and control system which records the oil content and automatically stops the discharge if allowable oil content is exceeded.¹⁷ Oily ballast from fuel tanks of existing tank vessels must be similarly treated; new vessels may not ballast fuel tanks. These standards will reduce oil inputs from tanker bilges and bunkers, but how much is hard to say because of the number of variables involved in bilge accumulation and oil content. There will be an increased need for shore disposal and oil reprocessing facilities where waste oil, purifier sludge, etc. cannot be reused on the vessels.

Cargo tank arrangement and size: Another provision included in the regulations relates to the arrangements of vessel tanks and limitations of tank size for new tank vessels and some existing tank vessels. The objectives of these provisions are to place an upper limit on the quantity of oil which can escape into the sea as a result of collision, grounding or other vessel casualty. Certain ships even now under construction would have to comply with the tank arrangement and size limitations. That provision would apply to tank vessels presently under construction which will be completed after January 1, 1977, and to vessels completed before this date but which were started after January 1, 1972.

The regulation is written assuming damage conditions for both collision and grounding situations. These values represent severe assumed injuries in such accidents and are to be used to

¹⁷The Coast Guard has not yet proposed specifications for either of these items. The discussion of oil content monitors and oily water separators discussed under the heading, *cargo residue discharge standards* above, applies to these items also.

determine, by trial at all conceivable locations, the worst combination of compartments which would be breached by such an accident. The consequence of these injuries should not exceed the hypothetical outflow limits mentioned earlier, thereby providing criteria for vessel design and encouraging use of double bottoms, double sides, void spaces and segregated ballast.

The effect of *cargo tank arrangement and size* is largely one of reducing the potential size of future outflows due to tanker accidents from what might have resulted if the trend toward larger individual tanks had been allowed to continue.

The effect of *subdivision and stability* requirements on oil outflows also depends on the number of new ships entering service. These requirements will improve the ability of tankers to remain afloat after flooding of cargo or machinery spaces:

Vessels over 225 meters long (738 feet, approximately 50,000 DWT)	Must be able to survive flooding of any two adjacent compartments
Between 225 meters and 150 meters (492 feet, approximately 13,000 DWT)	Flooding of machinery space or any two other adjacent compartments
Less than 150 meters	Flooding of any single compartment other than machinery

These measures will decrease risk of accidental outflow from collisions and flooding of machinery space by increasing survivability of new vessels. For example, of the 47 tankers, over 10,000 DWT lost at sea during the period 1969-1973, six of the losses involved flooding of the machinery space. The circumstances in these cases are such that it appears the new subdivision and damage stability requirements could have prevented loss of these ships and resulting oil outflow.¹⁸

Table 7 summarizes the expected effects of these regulations on the oil inputs from U.S. tankers. The cargo discharge residue standards contribute the bulk of the reduction — an estimated 80,000 metric tons per year.

¹⁸These losses are: ANASTASIA J.L., GEZINA BROVIG, ALKIS, GUISEPPE GIULI, PLOIESTI, and the TRADER.

TABLE 7. Expected Effects of Regulations on Oil Inputs to the Sea from U.S. Tankers

	Segregated Ballast	Cargo Residue Discharge Standards	Bilge Discharge Standards	Cargo Tank Arrangement and Size	Subdivision and Stability
Tank cleaning and ballasting					
Ballasting and deballasting and associated tank cleaning	decrease for new vessels over 70,000 DWT	decrease significantly for all vessels			
Tank cleaning for sediment control crude oil		decrease for all vessels			
Tank cleaning of refined product tanker for ballast and for cargo purity		decrease for all vessels			
Tank cleaning prior to shipyard repairs		decrease for all vessels			
Tanker bilges and bunkering			decrease for all vessels		
Terminal operations					

*Amounts shown are the reduction of annual oil input in thousands of metric tons based on Table 6.

TABLE 7. (Con't.) Expected Effects of Regulations on Oil Inputs to the Sea from U.S. Tankers

	Segregated Ballast	Cargo Residue Discharge Standards	Bilge Discharge Standards	Cargo Tank Arrangement and Size	Subdivision and Stability
Tanker Accidents Breakdowns	—	—	—	small decrease	decrease
Collisions	decrease	—	—	decrease	decrease
Explosions	decrease (less tank cleaning)	—	—	decrease	—
Fires	—	—	—	—	—
Groundings	decrease	—	—	small decrease (DB incentive)	decrease
Rammings	decrease	—	—	—	—
Structural Failures	unknown	—	—	unknown	decrease
Other	—	—	—	—	decrease

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3.4 Other Impacts of the Regulations

The economic impact, technical feasibility, and safety impact of the regulations are discussed in this section.

Economic Impact

The regulations require a number of actions be taken by shipowners and operators in an effort to reduce oil inputs to the oceans. These actions will require additional capital investment in vessels and equipment and increase operating costs. These increased costs will ultimately be passed on to the consumer as increased transportation costs and higher prices for petroleum products. The actions required by the regulations are shown in Table 8.

The largest cost associated with these regulations is the increase in construction cost to provide segregated ballast space on new tankers over 70,000 deadweight tons. Various estimates of cost increases to provide segregated ballast have been made. A study submitted by the United States to IMCO prior to the 1973 Pollution Conference estimated the increase in required freight rate to range from about 4 percent to as much as 10 percent, depending on ship size, voyage length, how the ballast was distributed (staggered wing, double bottom, double skin, etc.), and a host of other variables.¹⁹ It should be noted that these costs are representative, but not necessarily optimum (no effort was made to optimize individual designs since the study was done to compare various segregated ballast designs) and depend on a great many assumptions involving some uncertainty.

Required freight rate depends on vessel size and length of voyage. Some typical rates, their contribution to oil prices and the effect of a 10-percent increase in required freight rate are shown in Table 9.

¹⁹Required freight rate (RFR) is commonly used as a measure of vessel profitability. It is defined as the income, per unit of cargo, that a shipowner must collect in order to earn returns equivalent to the repayment of his investment plus some arbitrary (but reasonable) rate of interest. (Reference 24) RFR takes into account amortization of capital costs as well as operating costs. See Table 7 of Reference 13, Part 1 and page xi of Part 2, for additional background on increase in RFR due to additional construction cost of segregated ballast.

TABLE 8. Action Required by Regulations

Requirement	Existing Vessels	New Vessels
Segregated ballast tanks	Not required	For vessels over 70,000 DWT, increasing size of ship by approximately 20% for same payload results in construction and operating cost increases. Additional pump and piping for segregated ballast system. Additional design cost to locate segregated ballast.
Cargo residue discharge standards Pumping, piping and discharge arrangements	Install new discharge line	Install new discharge line
Designated area	Not required	Located area so overboard discharge can be observed. Install pump shutoff control.
Slop tanks	Designate slop tank, modify piping by December 31, 1977	Design and install slop tank system.

TABLE 8. (Con't.) Action Required by Regulations

Requirement	Existing Vessels	New Vessels
Cargo and ballast system information	Prepare information	Prepare information
Discharge of cargo residue	Install oil discharge Monitoring and control system. Use LOT procedures. Dispose of slops ashore. Cost of reception facilities. Delay in port to discharge slops. Additional time at Sea for LOT.	Install oil discharge Monitoring and control system. Use LOT procedures. Dispose of slops ashore. Cost of reception facilities. Delay in port to discharge slops. Additional time at sea for LOT.
Bulge discharge standards Only residue tank	Install tank Alter piping	Install tank and piping
Machinery space bulges	Oil discharge monitoring and control system or oily water separating equipment	Oil discharge monitoring and control system or oily water separating equipment
Cargo tank arrangement and size	Not required	Additional design calculations. Restrict tank size.
Subdivision and stability	Not required	Additional design calculations.

In addition to increasing the cost of new tanker construction, the regulations will require installation of monitoring and control equipment and piping changes to both new and existing vessels at an estimated cost of \$200,000 per vessel. This is, of course, small compared to the increased construction costs discussed above (say 5 percent increase on a \$30 million ship, or \$1.5 million) so its effect on costs will also be small.

Another requirement that will raise transportation costs which is not included in Table 9, is shore reception facilities.

TABLE 9. Typical Transportation Costs for Tanker Oil Shipments

Voyage	Venezuela- U.S. East Coast	Persian Gulf- U.S. East Coast
Ship	20,000 DWT	150,000 DWT
Approximate Required Freight Rate (RFR)	\$0.32/bbl	\$0.70/bbl
Assumed Cost of Crude Oil	\$12/bbl	\$12/bbl
% of Cost represented by Ocean Transportation	2.7%	5.8%
Maximum Estimated % Increase in RFR ^{19a}	10%	10%
\$ Increase in RFR	\$0.03/bbl	\$0.07/bbl
(Price Increase required to cover increased transportation cost)	(0.07 cents/gal)	(0.17 cents/gal)

^{19a}See page 53 for discussion of range of estimates for increased RFR and factors influencing RFR.

In addition, there will likely be some additional costs for enforcement of the new standards by the Coast Guard. Some additional plan review and inspection will be required. Vessel boarding and aerial surveillance may be required to provide effective enforcement of the discharge standards.

Technical Feasibility

The achievement of the discharge standards in the regulations, the same standards as those in the 1973 Marine Pollution Convention, is considered technically feasible. Improvements in the oil content monitors now available, particularly for refined products, are needed to improve separation of oil from water on board ships to optimum levels, but these improvements are not necessary to achieve the bulk of the possible improvement.

Safety Impact

The regulations, directed at pollution control, will also have safety benefits. Segregated ballast on ships over 70,000 DWT will give additional protection from damage from collisions and groundings (and fires which sometimes occur as a result). Subdivision and stability requirements will contribute to survivability of new tankers after damage also.

The piping system requirements and segregated ballast distribution requirements will increase complexity of tankers and may make proper inspection and repair of tank interiors more difficult. The Coast Guard does not feel these potential problems are serious enough to warrant rejecting these requirements.

4. ALTERNATIVES TO THE PROPOSED ACTION AND FUTURE ACTIONS PLANNED BY THE COAST GUARD

4.1 Introduction

Title II of the Ports and Waterways Safety Act of 1972, which amended the Tank Vessel Act (46 U.S.C. 391a), states in Section 201(7)(A):

"The Secretary shall begin publication as soon as practicable of proposed rules and regulations setting forth minimum standards of design, construction, alteration, and repair of the vessels to which this section applies for the purpose of protecting the marine environment. Such rules and

regulations shall, to the extent possible, include but not be limited to standards to improve vessel maneuvering and stopping ability and otherwise reduce the possibility of collision, grounding, or other accident, to reduce cargo loss following collision, grounding, or other accident, and to reduce damage to the marine environment by normal vessel operations such as ballasting and deballasting, cargo handling, and other activities."

Congress thus directed that rules be developed in three areas:

- a. standards to improve vessel maneuvering and stopping ability and otherwise reduce the possibility of collision, grounding, or other accident;
- b. standards to reduce cargo loss following collision, grounding, or other accident; and
- c. standards to reduce damage to the marine environment by normal vessel operations such as ballasting and deballasting, cargo handling and other activities.

It has not been possible for the Coast Guard to develop rules comprehensively covering all of these problems in the time period since the Ports and Waterways Safety Act became law. The rules for tank vessels in domestic trade, constituting a first step toward the body of rules and regulations that will ultimately be required to fully implement the Act, concentrate primarily on the third area listed above and also contain some significant measures affecting the second area. There are two reasons for this emphasis: operational pollution accounts for 80 percent of the oil inputs to the oceans from tankers, and international standards which will greatly reduce operational pollution, as well as contribute significantly to the reduction of accidental oil outflows, have been elaborated and proposed for worldwide adoption in the 1973 Marine Pollution Convention.

The alternatives to the proposed action in this case are other forms the regulations might have taken—requirements that might have been omitted, added, or changed. The basis for comparison of these alternatives is the rules described in Section 2, the environmental impact of which is assessed in Section 3. These rules are based on the standards contained in the 1973 Marine Pollution Convention.

4.2 Summary of Alternatives Considered

Here is a list of the alternatives considered. (The reasons why these alternatives were not adopted are discussed on the following pages):

- A. Publish no additional regulations. (No Action)
- B. Publish regulations less stringent than those proposed. These could include:
 1. Less strict discharge criteria which would allow more oil to be discharged overboard from tank cleaning and ballasting operations.
 2. Discharge restrictions allowing discharges into waters less than 50 miles from U.S. coastlines.
 3. Regulations not requiring segregated ballast on new tankers over 70,000 DWT.
- C. Publish regulations more stringent than those proposed. These could include:
 1. Regulations prohibiting any discharge of oily mixtures to the sea.
 2. Regulations allowing oily mixtures to be discharged but limiting the concentration and total amount of oil discharged to quantities smaller than those in the proposed rules.
 3. Regulations requiring segregated ballast
 - a. on tankers smaller than 70,000 DWT
 - b. on existing tankers
 - c. be located so as to reduce cargo loss following collision, grounding, or other accident (specifically, in double bottoms).
 4. Regulations requiring double bottoms.
 5. Regulations requiring smaller tank size limits.
 6. Regulations requiring various construction features and equipment intended to improve vessel maneuvering and stopping ability. These include:
 - a. increased astern horsepower (greater backing power)
 - b. twin screws and twin rudders
 - c. controllable pitch propeller(s)
 - d. bow thruster, or bow and stern thrusters

- e. more rudder area
- f. faster rudder turning rate
- g. flapped rudder
- h. rotating cylinder rudder
- i. auxiliary braking devices (flaps, parachutes, etc.)
- 7. Regulations similar to those contained in the June 28, 1974, advance notice of proposed rulemaking on Marine Traffic Requirements, including regulations on navigation equipment.
- 8. Regulations requiring cargo tank inerting systems.
- 9. Regulations requiring posting of vessel maneuvering information in the pilothouse of all vessels.
- 10. Regulations requiring improved radar training for ship's officers.
- 11. Regulations setting improved standards for training and watchkeeping.
- D. Reduction of oil consumption or reduction of oil imports.
- E. Use of a different mode of transportation for oil.

4.3 Reasons Why Alternatives Were Rejected

The alternative of issuing no additional regulations was rejected since Title II of the Ports and Waterways Safety Act requires the Coast Guard to publish proposed rules and regulations for minimum standards of tank vessel design, construction, alteration and repair for the purpose of protecting the marine environment. In addition, failure to issue rules would be inconsistent with the position the United States took at the 1973 Marine Pollution Conference and the provisions of the resulting international agreement.

The second alternative, that of publishing regulations less stringent than those that have been proposed, includes several sub-alternatives:

- 1. Less strict discharge criteria which would allow more oil to be discharged overboard from tank cleaning and ballasting operations,

- 2. Discharge restrictions allowing discharges of oily mixtures into waters less than 50 miles from U.S. coastlines, and
- 3. Regulations not requiring segregated ballast on new tankers over 70,000 DWT.

These sub-alternatives and, indeed, all courses of action involving regulations less stringent than the proposed regulations and the standards contained in the 1973 Marine Pollution Convention (which the proposed regulations embody), have been rejected for the following reasons:

They are inconsistent with the standards contained in the 1973 Marine Pollution Convention; they are less desirable from an environmental viewpoint since they would not restrict the amount of oil entering the world's oceans to as great an extent as the proposed rules; and technology is available to do better in terms of reduction of oil inputs from operational sources (*i.e.*, higher standards are practicable in terms of cost and technical feasibility).

The need for regulations applicable to U.S. tankers in domestic trade to be consistent with the 1973 Marine Pollution Convention is discussed on pages 4-10 of this environmental impact statement. The matter of setting discharge criteria is discussed further in the following paragraphs on more stringent regulations. No detailed assessment of added environmental damage which might result from regulations allowing discharges within 50 miles of U.S. coastlines (but outside U.S. territorial waters) has been made, but the Coast Guard believes that the validity of prohibiting discharges from tanker cargo spaces into waters of this zone is adequately supported by previous international agreements. Segregated ballast was recognized by the 1973 Marine Pollution Conference as an effective means of reducing the amount of oily mixtures created as a result of tank ballasting, particularly on crude oil carriers which make up the fleet of ships over 70,000 DWT.

More Stringent Regulations

The alternative of publishing regulations more stringent than those proposed is the most complicated of all the alternatives

considered because of all the possible features or measures which might have been included in the regulations. A number of the sub-alternatives considered have been rejected for purposes of this rulemaking, but will probably be included in the full body of the rules and regulations that will ultimately be required to fully implement the Ports and Waterways Safety Act of 1972. Some of these features or measures have already started through the rulemaking process and others are still under development by the Coast Guard. Reasons for the rejection of these features or measures for purposes of this rulemaking are discussed in the following paragraphs, with cross-references to additional discussion elsewhere in this impact statement where necessary.

Prohibit Any Discharge of An Oily Mixture

In order to reduce operational outflows, regulations prohibiting any discharge of an oily mixture to the sea from a tank vessel's cargo spaces might be published. This prohibition might be achieved by requiring tank vessels to:

- a. wash tanks at the unloading point and transfer the tank washings to a reception facility prior to taking on clean ballast for the return voyage; or
- b. retain all dirty ballast and tank washings on board the vessel and then transfer them to a reception facility; or
- c. carry segregated ballast and retain on board all tank washings, dirty ballast from fuel oil tanks, and bilge water containing lubricating and fuel oil drained or leaked from machinery until they can be transferred to a reception facility.

The concept of a total prohibition against discharges of oily mixtures into the sea and these means of achieving such a goal have been rejected for the following reasons: it is inconsistent with the standards established by the 1973 Marine Pollution Convention; it would create greater shore reception facility problems than we already have with the proposed regulations; it would involve additional time delays for tankers; and it sets a standard that will be impractical for application to vessels other than tankers.

The need for regulations applicable to U.S. tankers in domestic trade to be consistent with the standards established by the 1973 Marine Pollution Convention is discussed on pages 4-10 of this environmental impact statement.

The proposed regulations will increase the need for shoreside oily residue reception and treatment facilities, particularly where cargoes not amenable to load-on-top procedures are being transported. Questions concerning the availability and environmental effects of shore reception facilities are discussed on page 47. The procedures involving washing tanks prior to departure and retaining all dirty ballast until end of voyage, procedures a. and b. above, would greatly increase the need for shore reception facilities, since much larger amounts of washwater and dirty ballast would have to be treated. Both of these alternatives would, then, only make an already serious situation worse.

Neglecting delays due to port congestion around reception facilities, procedures a. and b. would also involve additional vessel voyage time—about 10 percent more for a., and a slightly smaller amount for b. These delays would be reflected in increased costs and numbers of ships needed to provide the same throughout capacity.

If regulations prohibiting the discharge of an oily mixture to the sea from tank vessels were published, then this same restriction would, in the Coast Guard's view, have to be applied to all other seagoing vessels. (Note that the requirements of the 1973 Marine Pollution Convention apply to all vessels, not just tank vessels. Also, refer to pages 8-9 for a discussion of grounds for making distinctions in the regulations applicable to particular classes or groups of vessels.) All bilge water would then have to be retained on board for disposal at a shoreside reception facility. This would not present a serious problem on tank vessels where tankage used for cargo slops could probably also accommodate bilge water generated, but other types of vessels would be required to install large storage tanks at substantial cost. A requirement to provide storage tanks for all of a ship's bilge water is both impractical and unnecessary in the Coast Guard's view.

Although prohibiting any discharge of oily mixtures, or a "zero discharge standard" as it is sometimes called, has been rejected as an alternative for purposes of these regulations applicable to all tank vessels in domestic trade, such a standard will be applied to vessels loading oil at the Alaska pipeline terminal at Valdez. The permit agreement between the Department of the Interior and Alyeska Pipeline Corporation stipulates that ships loading there will discharge all oily residues ashore and that shore reception facilities will be provided. This satisfies demands for such a standard on this trade without influencing international acceptance of the Marine Pollution Convention due to unilateral U.S. action.

Allow Some Discharge But Not As Much As Proposed

Another possibility for reducing operational outflow from levels permitted by the proposed regulations would be to publish regulations allowing oily mixtures to be discharged, but limiting the concentration and total amounts of oil discharged to quantities smaller than those in the proposed rules. This alternative has been rejected for the following reasons: Such action is not consistent with the standards of the 1973 Marine Pollution Convention; it involves significant problems in arriving at permissible discharge quantities; it is not practical at the present stage of technological development; and it would involve considerable time delay while improved shipboard separation and monitoring techniques were developed.

The need for regulations applicable to U.S. tankers in domestic trade to be consistent with the standards established by the 1973 Marine Pollution Convention is discussed on pages 4-10 of this environmental impact statement.

The discharge criteria contained in the proposed regulations are identical to those in the 1973 Marine Pollution Convention. The values set by the Conference represent consensus of expert opinion, based on shipboard tests, of results that can be achieved by diligent use of load-on-top techniques with the separation and monitoring techniques currently available. At a discharge rate of

60 liters of oil per mile, whatever sheen is created by oil on the water disappears a short distance behind the ship. Oil-in-water concentrations left in the wake of a ship discharging such a mixture at least 50 miles offshore are well below the levels at which environmental damage has been observed. (See conclusions of NAS report *Petroleum in the Marine Environment* starting on page 235 of this impact statement.) The discharge criteria set forth in the regulations represent the most effective pollution control performance standard achievable with load-on-top techniques presently available.

It would be much more satisfying if, as the Center for Law and Social Policy suggested in commenting on the draft EIS, any damage to the marine environment produced at a 60 liters per mile discharge rate could be set forth and assessed and discharge criteria established on the basis of (a) conclusive evidence showing it is not technologically feasible to reduce discharges below these levels and (b) conclusive evidence that discharges at such levels are not harmful to the marine environment.¹⁰⁶ Unfortunately, as with many other environmental issues, conclusive evidence is not available and decisions must be made in the face of some uncertainty. Work done in preparation for the 1973 Marine Pollution Conference and deliberations at the Conference support the belief that the discharge criteria in the Convention and the proposed regulations represent the limits of what is technologically feasible today and in the near future. The report, *Petroleum in the Marine Environment* (reference 5), supports the belief that discharges at the 60 liters per mile level will not significantly damage the marine environment. But in both cases the evidence is far from "conclusive."

In view of this, the Coast Guard rejects as impractical the notion of setting discharge criteria for purposes of these regulations which are more stringent than those in the 1973 Marine Pollution Convention. The Coast Guard also considers a total prohibition against any discharge of an oily mixture to be equally impractical.

¹⁰⁶See pages 149, 176, and 177 of this impact statement.

Additional Requirements for Segregated Ballast

The Coast Guard adopted for purposes of these regulations a requirement for segregated ballast on new tankers over 70,000 DWT. Several additional segregated ballast measures were considered and rejected. These measures are: requiring segregated ballast on new tankers smaller than 70,000 DWT (in addition to requiring it on new tankers over 70,000 DWT as the proposed regulations do); requiring existing tankers be modified to provide segregated ballast spaces; and requiring that segregated ballast be located so as to reduce cargo loss following collision, grounding or other accident (and, specifically, in double bottoms).

The first of these, requiring segregated ballast on tankers smaller than 70,000 DWT, has been rejected because it is not included in the standards contained in the 1973 Marine Pollution Convention, and because it would not be an effective pollution prevention measure on smaller tank vessels because most of these vessels carry petroleum products rather than crude oil and must wash tanks for cargo purity reasons rather than to provide space for clean ballast.

The need for regulations applicable to U.S. tankers in domestic trade to be consistent with the standards established by the 1973 Marine Pollution Convention is discussed on pages 4-10 of this environmental impact statement.

Tankers clean cargo tanks for several reasons:

- a. to provide space for clean ballast,
- b. to remove sediment deposited by previous cargoes,
- c. to prepare a tank for loading where maintaining the purity of the next cargo is very important, and
- d. to make a tank safe for internal inspection and repair work.

Segregated ballast will eliminate the need to wash cargo tanks to provide space for clean ballast, but it does not affect the need

to clean tanks for the other purposes mentioned above. All tankers have to clean tanks periodically for internal inspection and repairs. Crude oil carriers have to do some cleaning to control sediment buildup, but generally they do not have to worry about cleaning to insure purity of the next cargo. Most product carriers are forced to clean all of their tanks on the ballast leg of each voyage to insure their next cargo is not contaminated by remnants of their last cargo. While segregated ballast will have a significant impact on operational outflows from crude oil carriers (most of which are larger than 70,000 DWT), it would not significantly reduce the amount of tank cleaning and the resulting operational outflows from product carriers (all of which are under 70,000 DWT) since the oily mixtures are created by cargo purity washing needs, rather than clean ballast considerations.

The second segregated ballast measure, requiring existing tankers be modified to provide segregated ballast spaces, has been rejected for purposes of this rulemaking on the following grounds: It is not required by international standards contained in the 1973 Marine Pollution Convention; it must be done on a worldwide basis if adverse effects on the competitive standing of U.S. vessels are to be avoided; and there is a higher priority need to get the principle of segregated ballast for new vessels accepted worldwide before trying to extend segregated ballast requirements to existing vessels. The need for regulations applicable to U.S. tankers in domestic trade to be consistent with the standards established by the 1973 Marine Pollution Convention is discussed on pages 4-10 of this environmental impact statement. At this point, the Coast Guard's greatest concern is to get the Convention requirement for segregated ballast on new vessels accepted internationally and into force. Once that goal is realized, consideration can be given to extending segregated ballast requirements to existing vessels.

The third segregated ballast measure, requiring that segregated ballast be located so as to reduce cargo loss following collision, grounding, or other accident (and, specifically, in double bottoms), has been at least partially incorporated into the final rules, although double bottoms are not required. Requirements for location of segregated ballast are discussed on page 19 and in

Appendix C, starting on page 241. The alternative of specifically requiring double bottoms is discussed in the following paragraphs.

Measures to Reduce Accidents and Cargo Loss Following Accidents

As noted on page 58, it has not been possible to develop a comprehensive set of rules covering all aspects of the problem of oil pollution from tankers in the period since the Ports and Waterways Safety Act became law. The proposed rules, the first step toward full implementation of the Act, concentrate primarily on operational pollution because 80 percent of the oil inputs to the oceans from tankers result from routine operations, and because international standards which will greatly reduce operational pollution have been elaborated and proposed for worldwide adoption. On the other hand, the problem of accidental pollution, which has received much more public attention, accounts for only 15 percent of oil inputs from tankers but is more difficult to solve. The remaining measures to be discussed as part of the alternative of publishing regulations more stringent than those proposed have to do with standards proposed to reduce the possibility of an accident or to reduce cargo loss following an accident.

Before one can evaluate the effectiveness of various measures intended to avoid accidents or to mitigate the resulting oil outflows, it is necessary to have a basic understanding of the tanker accident phenomenon and the factors influencing accident occurrence and effects. The discussion on pages 62-81 provides background on tanker accidents and many of the vessel equipment and features discussed in the following paragraphs. The reader should refer to the expanded discussion where indicated.

Double Bottoms^{19c}

A requirement that new U.S. tank vessels intended for use in domestic trade be constructed with a double bottom within the cargo space has been rejected for purposes of these regulations

^{19c}For a description of a double bottom and discussion of why they are used on various types of ships refer to page 196 of this EIS.

for the following reasons: Such a requirement is not included in the 1973 Marine Pollution Convention, and double bottoms would be ineffective in reducing cargo loss during accidents other than groundings. The need for regulations applicable to U.S. tankers in domestic trade to be consistent with the standards contained in the 1973 Marine Pollution Convention is discussed on pages 4-10 of this environmental impact statement. Frequency and seriousness of various types of accidents, and double bottom cost, effectiveness, and disadvantages are discussed on pages 72-77. No particular type of vessel damage so dominates accidental outflow that a single design solution should, in the Coast Guard's view, be stipulated by law or regulation.

Smaller Tank Size Limits

A requirement that new U.S. tank vessels intended for use in domestic trade be built with tank size limits smaller than those included in the proposed rules (described on page 21) was rejected for the following reasons: Such a requirement would not be consistent with the international standards in the 1973 Marine Pollution Convention; any reduction in accidental outflow achieved would be offset by increased operational pollution; and piping system complexity, vessel cost, chances of overfilling of tanks, and vessel loading times would all be increased. The need for regulations applicable to U.S. tank vessels in domestic trade to be consistent with the requirements of the 1973 Marine Pollution Convention is discussed on pages 4-10. The increase of operational pollution due to increased tank surface area and effects of increased piping system complexity, vessel cost, risk of overfilling, and vessel loading times are discussed on page 77.

Improvements in Maneuvering and Stopping Ability

Requirements for various construction features and equipment intended to improve vessel maneuvering and stopping ability (and thus reduce the possibility of an accident) have been rejected as part of these proposed regulations for the following reasons: Such requirements are not included in the international standards in the 1973 Marine Pollution Convention; there are unresolved questions concerning their effectiveness in reducing

accidents which must be cleared up before regulations are published; and the features and equipment available improve maneuvering and stopping ability of large tankers only marginally. The need for regulations applicable to U.S. tank vessels in domestic trade to be consistent with the requirements of the 1973 Marine Pollution Convention is discussed on pages 4-10. Effectiveness of various construction features and equipment in improving maneuvering and stopping ability and in reducing accidents is discussed on pages 64-71. The primary reason for rejecting these requirements is the absence of any evidence that the improvements in maneuvering and stopping ability which these features and equipment would provide for large tankers would materially reduce the possibility of collision, grounding, or other accident.

Marine Traffic Requirements

While it has not been possible for the Coast Guard to develop a comprehensive set of rules covering all aspects of the tanker oil pollution problem in the period since the Ports and Waterways Safety Act became law, one thing that a review of accident reports has made clear is that insuring adequate human performance is most important in avoiding tanker accidents. While much remains to be learned about why humans sometimes fail to perform adequately and about the interrelationships between man and the other system components, the Coast Guard has concluded that it is important to act now on what has been learned in an attempt to bring about improved human performance. An advance notice of proposed rulemaking entitled "Marine Traffic Requirements" was therefore published along with the proposed regulations for tank vessels in domestic trade on June 28, 1974. The notice indicated that the Coast Guard was considering requirements for improved operating practices and mandatory navigation equipment, and solicited comment from the public. Requirements incorporating provisions contained in the advance notice were rejected for purposes of these regulations only because more work remains to be done by the Coast Guard to prepare proposed rules which effectively achieve the objectives set out in the advance notice.

Inerting Systems

The rules proposed on June 28, 1974, contained no requirements for cargo tank inerting systems. Proposed rules for tank vessel safety improvements, which include cargo tank inerting systems on crude oil tankers over 100,000 DWT and on combination carriers (bulk/oil and ore/oil vessels) over 50,000 DWT, were subsequently published in the April 21, 1975, Federal Register. The primary benefits of inerting are safety benefits, since only a small fraction of oil inputs to the oceans results from cargo tank explosions. (Refer to page 37.)

Posting of Vessel Maneuvering Information

One area of inquiry concerning efforts to improve human performance in piloting large tankers concerns the information that a vessel's pilot or master needs to have to safely direct the vessel's movements. Requirements that certain information on the maneuvering and stopping characteristics of all ships over 1,600 gross tons (not just tankships) were published in the January 15, 1975, Federal Register. While not a part of these rules, requirements for posting of vessel maneuvering information are a part of the Coast Guard's overall program for implementing the Ports and Waterways Safety Act.

Improved Radar Training

Another measure which could have an effect on accidental oil outflows is a requirement for improved training for ship's officers in the use of radar in collision avoidance. Such a requirement was rejected for purposes of these regulations because additional work is needed before regulations are issued. The Coast Guard is currently working with the Maritime Administration and various maritime training schools and institutes to make improved courses in the use of radar available to a greater number of mariners. The Coast Guard has also moved to substitute approved radar school courses for the plotting portion of the Coast Guard examination given for original licenses, license renewal, or upgrading of a license. Such courses have proven more effective than pen-and-pencil exams. Providing proper training in the use of radar in avoiding accidents is an important step toward reducing the possibility of collision and grounding.

Improved Standards for Training and Watchkeeping

Regulations setting improved standards for training and watchkeeping were rejected as an alternative for purposes of these regulations because additional progress toward achieving international agreement on standards is needed before regulations can be proposed. In early 1970, an IMCO working group reported:

"* * * that in view of the continuing alarming rise in maritime casualties and pollution, it is necessary for urgent action to be taken aimed at strengthening and improving standards of training and professional qualifications of mariners as a means of securing better guarantees of safety at sea and protection of the marine environment."

Since 1971 the IMCO Sub-Committee on Standards of Training and Watchkeeping has been working with U.S. participation to prepare documents dealing with personnel standards and qualifications which can form the basis for an international conference on the subject, tentatively scheduled for 1977. Most of the world's merchant fleet sails under foreign flags. This means the United States does not have direct control over standards for crew training and watchkeeping on these ships. It is most important, therefore, that the problems of improving training and professional qualifications, particularly on foreign vessels where standards may not be as high as on U.S. ships, be approached on an international basis through IMCO.

Reduction of Oil Consumption or Reduction of Oil Imports

Both of these are being discussed as proposed national goals for economic, political, and social, as well as environmental reasons. Neither of these can be considered serious alternatives to the pollution prevention regulations under consideration, although they will have an impact on the number and size of tankers needed to meet transportation needs on construction of new tankers. Recent reduction in demand for transportation of crude oil, along with delivery of new tonnage, have led to the availability of surplus tonnage, collapse of the tanker market, idle ships, and cancellation of orders for new tonnage. Such conditions

mean owners must reduce operating costs as much as possible. It also means marginally profitable vessels will be laid up until market conditions improve. Therefore, these cannot be considered realistic alternatives to the proposed rules.

Use Different Mode of Transportation for Oil

The use of some alternate mode of transportation for oil cannot be considered a serious alternative to the pollution prevention regulations. Tankers have evolved to fill a need for transportation that cannot be met by other modes.

4.4 Discussion of Reasons for Rejection of Alternatives

Tanker Accidents

Section 3.2 outlined the sources of marine pollution from tanker accidents and estimated (Table 4) how much oil is deposited annually from accidents. A tanker accident, like any accident, can be defined as an undesirable and unexpected happening. Because of the adverse consequences of accidents, personnel involved with any activity, including tanker operation, generally follow methods and procedures which eliminate the causes leading to accidents. This results in an accident being a rare happening which is almost always a surprise to the people involved. Since people usually eliminate the causes leading to an accident, one would expect that when an accident did occur, the particular cause or causes would be easy to identify. Unfortunately, this is not always true. Infrequent occurrence of accidents, their surprising nature, and the lack of knowledge of why humans fail, make accidents difficult to analyze. Accident analysis always occurs after the unexpected event and is often complicated by emotional and legal problems. It is, therefore, important not to over-simplify accidents by attributing them to a single, simply-stated cause, and to recognize that when dealing with them, one is faced with rare events which almost always involve some human failings and which are difficult to analyze.

For discussion purposes, tanker accidents shown in Table 4 can be grouped into four categories: (1) those resulting from misdirected motion of the ship -- collisions, rammings and groundings; (2) structural failures; (3) fires and explosions; and (4) breakdowns.

Collisions, Rammings, and Groundings

Collision, ramming and grounding accidents occur when the normal sequence of vessel navigation is interrupted or otherwise becomes inadequate for the circumstances. The sequence of events leading to a casualty are:

1. A problem arises;
2. The shipboard personnel recognize that a problem exists;
3. The problem is "sized up" and alternative courses of action are evaluated;
4. Action is taken to control the problem (usually engine commands and/or rudder commands, although other actions, like dropping an anchor, are possible);
5. The vessel responds to the action;
6. Shipboard personnel sense the vessel response, re-evaluate the problem and take further action if necessary; and
7. Either the problem is resolved or a collision, ramming or grounding accident occurs.

If the accident is avoided, which is generally the case, no further action is required. However, if the accident occurs, then the personnel involved must take further action in order to keep the consequences to a minimum. It follows that there are two avenues which can be taken in order to reduce accidental pollution from tankers: (1) prevention before the accident occurs and (2) mitigation of the consequences after the accident occurs.

Preventive Measures

Preventive and mitigating measures will both be discussed; however, it should be noted that in overall system safety,

preventive measures are far more effective than mitigating measures. Preventive measures which can be taken to reduce the risk of a ship motion accident must be discussed in terms of the seven-step sequence leading to a casualty just discussed. Examination of that sequence points out that much more is involved than the ability of vessels to respond to engine and rudder commands. Because of this, the Coast Guard feels it is necessary to expand on the terms "maneuverability" and "stopping ability" contained in 46 U.S.C. 391a(7)(A). In order to respond to the intent of that law which is to "reduce the possibility of collision, grounding or other accident," the Coast Guard has chosen to define the term *controllability*, which is the ability of a vessel to successfully navigate from a certain specified location to another specified location. Controllability is composed of the following aspects:

- a. *Maneuverability* of a specific ship; stopping ability is included within the category of "maneuverability."
- b. The *environment* in which the specific ship is operating, including considerations of time of day, visibility, wind, current, and stage of tide.
- c. The constraints imposed by the *geographic location* within which the ship is operating, including considerations of depth of water, channel width, channel configuration, channel obstructions such as shoals, bridges, docks, etc., vessel traffic density, and availability of external aids to navigation.
- d. The *human element* as represented by the specific vessel personnel who must utilize their skills to evaluate the interactions of maneuverability, environment and geographic location and react correctly to the evaluation.

By using this definition of controllability, not only is the inherent maneuvering capability of a vessel considered, but also the locations where the ship operates, the surrounding environmental conditions, and the people operating the ship (probably the most important element). Each of these aspects by themselves deserve attention in evaluating accident preventive measures. However, concentrating efforts on one aspect without taking into account the others or their interrelationships will not be very productive.

The Coast Guard recognizes the importance of the interrelationships and is proceeding to evaluate and understand all the aspects of controllability and their interrelation. Our efforts to date have resulted in some preventive measures: Regulations for the posting of maneuvering information on the bridge, proposed regulations for navigation equipment, improved radar training for bridge personnel, IMCO Standards of Training and Watchkeeping, and regulations allowing the Captain of the Port to temporarily control traffic in areas determined to be especially hazardous. Preventive measures like these have a favorable impact on the first four steps of the seven-step sequence leading to a casualty. Still these regulations offer only partial solutions because the complexity of the problem makes it difficult to determine acceptable criteria against which vessel design and operations, channel configuration, traffic density, and environmental factors can be weighed. Simply stated, the problem is tough and we don't know all the answers.

Maneuverability

One aspect of controllability — maneuverability — has received more attention than the other aspects. Most comments received stated that the regulations should require improved maneuverability in tankships by requiring such design features as twin screws, twin rudders and bow thrusters. However, it is important to see that design features like these will affect only step 5 (vessel response) of the seven-step sequence leading to a casualty.

Stopping

Stopping ability of a ship is measured by both the distance and time required to stop from a given speed. The main factors which affect stopping are:

- a. Speed of ship at beginning of stopping maneuver.
- b. Amount of reverse thrust available for stopping, which is chiefly a function of the installed horsepower, type of propulsion system, and type and size of propeller.

- c. Time lag in applying reverse thrust.
- d. Amount of hydrodynamic resistance (drag) of the ship's hull.
- e. Mass of ship and cargo.

To improve stopping ability of tankers it is necessary to make improvement in any or all the above areas. Obviously, reducing ahead speeds will result in shorter stopping distances — a fact which shouldn't be taken lightly.

Compared to other forms of transportation, ships have a very low resistance to motion. The drag force (expressed as a fraction of each vehicle's weight force) of several vehicles may be compared as follows:

Automobile	0.07 - 0.1, depending on speed
Rail car	0.05
Merchant ship	0.01 - 0.001
Large tanker	0.0005

If a large tanker were capable of moving on land, it would roll on a grade too small to be perceptible. (14) This is, of course, one of the things that has led to use of large tankers — they move easily through the water and are very efficient (and therefore inexpensive) users of energy.

To overcome resistance and move the ship through the water a maximum propeller thrust of only a small fraction of the weight force is all that is required. For stopping the tanker considered above the maximum combined reverse thrust and hull resistance forces are about one thousandth of the vessels weight, providing decelerations of .001 g, or very roughly a knot per minute. Trials of such ships confirm 15 or 20 minutes is required to come to a stop from full speed. (14) But, such sluggish behavior is inherent in a low-drag vehicle and is not the result of any avoidable shortcomings in design.

Measures which have been frequently discussed by the public to improve stopping are increasing astern horsepower, installing

a controllable pitch propeller and installing auxiliary braking devices such as brake flaps and water parachutes.

Astern horsepower, which is usually some fraction of the design horsepower, affects the reverse thrust available for stopping. Design horsepower for a tanker is determined by requirements for the steady state steaming condition which constitutes a majority of a ship's life. In addition to safety considerations, other primary concerns of an owner when specifying the type of propulsion plant for his ship are high reliability, ease of maintenance and efficient use of fuel. From the standpoint of overall engineering efficiency, the propulsion system in a supertanker is very effective. The fact that the system has been optimized for steady steaming does not mean that the ship is unsafe from a maneuvering viewpoint.

Increasing astern horsepower will decrease stopping distance, but not very effectively. For example, providing *double* the normally installed astern horsepower would decrease stopping distance for a 250,000 DWT tanker traveling at 16 knots from 15 ship lengths to 12 ship lengths (a decrease of approximately 20 percent). A similar reduction in stopping distance can be achieved by slowing the ship from 16 knots to 13 knots in anticipation of a possible need to stop, such as when approaching more confined waters or a maneuvering situation.

A controllable-pitch propeller (CPP) would also shorten stopping distance, but again not to a large degree. Estimations based on manufacturers' reports are that CPP's would reduce the stopping distance of a standard 250,000 DWT tanker by 30 percent from 15 ship lengths to 10.5 ship lengths. A similar reduction in stopping distance can be achieved by reducing speed from 16 knots to 12 knots.

Auxiliary braking devices such as water parachutes and brake flaps act to increase the hydrodynamic resistance of the hull and thereby supply a retarding force to vessel forward motion. Since these devices depend on hydrodynamic resistance, which is roughly proportional to the square of ship's speed, they are relatively ineffective for ship stopping from slow speeds. Doubling

the hull resistance on the standard 250,000 DWT tanker would decrease the stopping distance from 16 knots by approximately 20 percent from 15 ship lengths to 12 ship lengths. Such an increase in hull resistance at 16 knots could be achieved by installing one 10 feet wide by 30 feet high flap on each side of the ship or by installing 12, ten feet in diameter, water parachutes, six per side.

This component of maneuverability has been discussed more than any other. Newspaper editorials, magazine articles, books and general public comment have all focused on the inadequate stopping ability of tank vessels. It is less clear, however, that stopping ability is, in fact, inadequate or that poor stopping ability has been a primary contributing factor to accidents. In the more than eight years since the first 200,000 DWT tanker (IDEMITSU MARU 1966) was put into service, the Coast Guard has not been able to document one case where inadequate stopping of a large tanker was a major contributing cause in a marine accident.

In comparison to smaller ships a large tanker requires more time and more distance to stop because of the tremendous mass of the vessel and its cargo. As already mentioned, the stopping distance of a standard 250,000 DWT tanker from service speed is approximately 15 ship lengths and there is no means by which this distance could be drastically reduced so that the ship could stop on a dime. Furthermore, there is no need for such a capability.

Those situations where a ship would be called upon to stop from full speed are extremely rare. In the open ocean where full speed is used, large tankers can readily detect the presence of other shipping and evade collisions with minor deviations from course. In an emergency, the most effective evasive maneuver is to put the ship into a turn assuming adequate room and water depth. The reason for the effectiveness of this maneuver is that the maximum distance travelled in the direction the vessel was originally moving at full speed, if full rudder is used is approximately 3 ship lengths in comparison to the 15 ship lengths required to stop.

In more confined waters and in harbors vessel speeds are reduced which results in shorter stopping distance. The average 250,000 DWT tanker will stop in less than 4 ship lengths when travelling at 6 knots. Also, in such waters and in and around offshore loading systems, large tankers have been assisted in their maneuvering, including stopping, by tugs in the same fashion as are other large ships (i.e., aircraft carriers, passenger liners and high speed container ships).

Turning Ability

The second aspect of vessel maneuverability — turning ability — is not discussed nearly as much as stopping ability, but is equally important. At operating speeds the turning radius of a specific vessel is the accepted measure of a vessel's turning ability. Turning radius is a function of the vessel shape, length-to-beam ratio, and rudder forces. Tank vessels, as presently designed, have excellent turning ability mainly because of their full shape and low length-to-beam ratio. The turning radius for a 250,000 DWT tanker is approximately 1.3 ship lengths while that of a much smaller and finer-lined Mariner class cargo ship is approximately 2.2 ship lengths. Possible design features, which would affect turning ability, are increasing rudder area, twin screws, bow and stern thrusters, faster rudder rate, flapped rudders and rotating cylinder rudders.

Installation of twin rudders would make it possible to increase the rudder area for a particular ship, thereby increasing the turning ability, *provided* twin screws were also installed so that the rudders would work in the propeller race. An increase of 60 percent in the presently designed rudder area for a standard 250,000 tanker would increase an already excellent turning ability by only 10 percent, thereby reducing the turning radius to about 1.2 ship lengths.

Turning ability at zero or very slow speeds can be substantially increased by installation of bow and stern thrusters. Generally these devices are ineffective at vessel speeds greater than 6 knots. Improvement in low speed maneuverability would help reduce those accidents in and around berths and piers —

most of which are rammings. However, of the one million tons of oil pollution from worldwide tanker accidents in the past five years, only 14,000 tons or 1.4 percent resulted from ramming casualties. Effectiveness of thrusters in reducing ramming casualties is not known. A further consideration in this area is the cross relationship of the human element and vessel design relating to bow and stern thrusters. At the Netherlands Ship Model Basin, where experiments of tanker maneuvers are conducted on a ship handling simulator, ship performance with the thrusters was observed to be worse than the standard ship not so equipped until after the pilots became practiced in using the new equipment on the specific test model.

Twin screws would also have some positive effect on the zero or very slow speed turning ability of tankers. By running one screw ahead and the other astern, a twisting moment (sic) is applied to the ship which will assist in turning the ship. However, this turning assist is not nearly as large as that for thrusters and is therefore less effective. Increased rudder rate has a very slight effect on turning ability. Increasing rudder rate on a standard 250,000 DWT tanker by 50 percent would increase turning ability by approximately 1-2 percent. Alternate rudder designs such as flapped rudders or the rotating cylinder rudders are promising innovations which could increase turning ability. However, these systems are still in the developmental stage and have never been used on large ships.

Course Changing

Course changing ability is closely related to turning ability, but differs in that it indicates the ability of a vessel to initiate or check a turn at operating speed. This aspect of maneuvering is measured by a standard maneuver known as the zig-zag or "Z-maneuver." Vessel design factors which have a major influence on course changing ability are mass, length, hull form, rudder area and rate of rudder deflection. Since mass, length, and hull form are generally fixed for large tankers, improvement in course changing ability would need to come from either increased rudder area or increased rate of rudder deflection. Again using a standard 250,000 DWT tanker as a measure, an increase in rudder area by

60 percent would improve course changing ability as measured by the "Z-maneuver" by approximately 10 percent. Increasing rudder rate by 100 percent would increase course changing ability by less than 10 percent.

Course Keeping Ability

Course keeping ability, sometimes called course stability, refers to the ability of a vessel to steer a straight course with minimum rudder action. One of the concerns about large tanker maneuverability has been the lack of course stability. Generally there is a misunderstanding regarding course stability. A clear distinction must be made between a dynamically stable ship and a directionally stable ship. A vessel is considered dynamically stable on a straight course if, when disturbed from her steady motion, she will soon resume that same motion along a slightly shifted path without any correcting rudder being applied. A steered ship is said to be directionally stable if sustained oscillations of the ship's motions or if the rudder motions needed to compensate the ship's heading errors are sufficiently small to be considered tolerable. Most full-form ships, regardless of size, cannot achieve dynamic stability, but can achieve an acceptable degree of directional stability. It is most desirable for a commercial vessel to possess directional stability. Loss of directional stability results in economic penalties due to increased voyage time and increased fuel consumption. Therefore, vessel owners have incentive to insure adequate course stability through design. Design factors which have a major effect on course keeping ability are vessel shape, length-to-beam ratio, rudder area and steering control system response parameters.

Design Changes to Improve Maneuverability

At this point it is evident that several design changes can be made to tank vessels in order to improve their inherent maneuverability. However, it should also be clear that none of the changes could be expected to improve the maneuverability of large tankships by more than 30 percent. The fact is that, because of their size, large tankers cannot be made to maneuver as readily as smaller ships. This realization is not surprising when one compares large ship operations with an analogous situation on the

highways where a 60,000 pound multi-axle truck is much less maneuverable (in terms of stopping and turning ability) than a 3000 pound automobile.

Realizing that inherent maneuverability of tank vessels can be improved, the questions to be asked are:

- a. Is there a need to improve the maneuverability?
- b. If the maneuverability is increased, what effect will this have on accident reduction?

One indication of a need to improve large tank vessel maneuverability would be if accident data indicated that large tankers were experiencing collision, ramming and grounding accidents at a rate greater than smaller vessels. Intuitive feeling is that large tankers should have a higher accident rate. However, this intuitive feeling is not supported by accident information. Worldwide accident figures (8) indicate that during the period 1969-1973, tankers over 150,000 DWT were involved in collisions, ramming, and groundings at the rate of 0.0465 involvements per ship year. (This means that based on the past five years of accident data, one could expect 4.65 percent of those tankers greater than 150,000 DWT to have a collision, a ramming, or a grounding each year.) The average frequency for all tankers greater than 3,000 DWT is 0.0958. The group of tankers having the highest frequency of accidents are those in the 20,000 - 40,000 DWT range where their frequency is 0.1265.

Another indication of a need to improve large tank vessel maneuverability would be if the analyses of individual collision, grounding, and ramming accidents showed that a lack of maneuverability was a major contributing factor (sic) in these accidents. To examine for this, Coast Guard casualty information for years 1972 through 1974 was sorted by the recorded cause of the accident. These sorts showed that there were 1206 vessels greater than 10,000 gross tons involved in collision, ramming, and grounding accidents. Of these 1206, only 80 (or 6.6 percent) could be attributed to inadequate vessel maneuverability, and most of these were the result of a breakdown of the installed propulsion and maneuvering system. In addition to sorting all casualties by

cause, individual accident records have been reviewed to see if the maneuvering design of the ships involved was inadequate. Results of the cause sort and individual accident investigations show that more than 65 percent of the accidents were caused in whole, or in part, by "inadequate human performance." Only 6 percent were attributed to inadequate vessel maneuvering capabilities. These percentages do not change appreciably with vessel size.

None of the casualty analyses conducted to date demonstrate a need for improved maneuverability of large tankships. While no need has been established, the Coast Guard does not consider its work in casualty analysis complete. As more is learned about the complex man-machine system which controls the movement of a ship from one port to another, the Coast Guard will be capable of analyzing individual casualties with new insights. In addition, as more is known of traffic patterns and tanker operations, worldwide tanker casualty information could be analyzed using various measures of exposure and risk, such as number of high risk areas traversed per year or amount of oil delivered per year per average ship size.

Just as no need for improved tank vessel maneuverability has been found, neither have we been able to determine how effective a particular improvement in maneuverability would be in reducing tanker accidents.

Because neither the need nor the effectiveness of improved maneuverability has been established, the Coast Guard feels there is inadequate justification for proposing regulations for such things as twin screws, twin rudders, bow thrusters, greater backing power, and controllable pitch propellers at this time. This is not to say that some minimum vessel design for maneuverability should not be established. But, the basis for establishing such a minimum must be its relation to the entire controllability question, and not just to the inherent maneuvering capability of the ship, as measured by standard maneuvers. When viewed in this context it becomes apparent that the minimum design standard necessary to insure safe navigation will vary for the same

ship from port to port and even within the same port area during varying weather and tidal conditions. What the Coast Guard must be able to do is: (1) identify those parameters of vessel movement which accurately measure its total controllability; (2) evaluate those parameters against the acceptable level of risk for that particular harbor or waterway and weather conditions; and then (3) determine if additional precautions, such as tugs, should be required. In using such an approach, the Coast Guard will offer the prospective ship buyer incentives to incorporate those individual added design features which he feels are to his economic advantage, while at the same time allowing him flexibility in evaluating the economic trade-off of vessel design. For example, if when transiting a particular bridge under certain wind and current conditions, a tanker equipped with the conventional maneuvering systems, is by a Coast Guard regulation required to wait at anchor and thus delay its arrival, or alternatively hire tugs, and if the same tanker would have been allowed to transit the bridge had she been equipped with thrusters, the lost revenue accruing from the delay and increased ship, operating, and crew expenses, and possibly tug costs, may cause the tanker owner to install thrusters on similar designs in order to achieve an economic benefit. Another beneficial feature of this incentive approach is that it can be applied to all existing vessels, both foreign and domestic.

Reliability

So far in discussing the maneuvering aspect of controllability, we have focused on the performance of vessels as designed. Another area of maneuverability is the reliability of the installed maneuvering system. Design features commonly discussed which would affect reliability of tank vessels are twin screws, twin rudders, twin boilers, and steering gear redundancy. Twin screws would allow partial propulsion power if one shaft were inoperable. Occurrences of breakdown when tankers were unable to proceed and subsequently resulted in pollution are very low. There were only 11 cases worldwide in the past five years during which time there accumulated approximately 21,000 tanker operating years. This record would indicate that installed propulsion systems,

which were mostly single rudder, single screw systems, have been reliable.

Propulsion power for large tankers is either provided by heavy slow-speed diesel engines or by a steam power plant. The United States has had little experience with slow-speed diesels, but the reliability has been proven in European and Japanese tankers. When the steam system is used, it is conceivable that only one main boiler may be installed, but the practice is to include provision for take-home capability such as that on the nuclear powered SAVANNAH. This is often done by installing an auxiliary boiler with the capacity to propel the vessel at considerably reduced speed through the low pressure stages of the main turbine. Duplication of the steering gear system is required by Coast Guard regulations, and that, coupled with recent recommendations of the Inter-governmental Maritime Consultative Organization (IMCO), seem adequate to insure sufficient steering system reliability.

The seven-step "sequence of a casualty" discussed previously and the subsequent discussion of controllability both indicate that insuring adequate human performance is most important in preventing ship motion casualties. While much remains to be learned concerning why humans fail to perform adequately and of how the human aspect relates to the other aspects of controllability, the Coast Guard believes it is necessary now to take steps to improve human performance, and enough information is available to do so. Therefore, in the June 28, 1974, Federal Register an Advance Notice of Proposed Rulemaking entitled "Marine Traffic Requirements" was published to inform the public that the Coast Guard has determined that there must be an improvement in the operating practices aboard all major vessels on the navigable waters and to set forth our concepts about how this could be done. Many comments were received on the advance notice. They are presently being evaluated, along with other inputs, in order to arrive at an effective set of rules to meet our objectives.

Mitigating Measures

Tanker accidents cannot be totally prevented by any or all of the measures discussed above or otherwise proposed. So long as oil is moved by sea, risk of accidents involving tankers which result in the release of oil will exist. It is necessary therefore to consider measures which will minimize the effects of accidents after they have occurred. Double hull construction (double bottom, double sides, or both double sides and double bottom), reduction of tank size limits, rapid removal of oil cargo from tanks open to the sea and cleanup of spilled oil are possible measures to reduce oil outflow or its effects.

Double Bottoms

The question of how effective the installation of double bottoms, double sides, or both might be in reducing oil outflows due to tanker accidents has received considerable attention. Until very recently, there were no double bottom tankers, and so there is no accident experience to rely on. Estimates of effectiveness of these measures must rest on (1) our knowledge of how past accidents of conventional tankers have resulted in oil pollution, and (2) estimates of how effective a double bottom or side installed in such a vessel might have been in preventing penetration of the cargo space and subsequent oil outflow. Tanker accidents, which everyone agrees occur all too frequently, are for statistical purposes relatively rare events, subject to the usual hazards of drawing inferences from relatively small samples. Table 10 presents information developed by the Coast Guard on tanker accidents over the five-year period, 1969-1973. Several important conclusions can be drawn from this information:

- a. Side-damaging accidents (collisions and ramblings) resulting in oil outflow occur with greater frequency than those resulting in bottom damage, the ratio being 1.4 to 1. Frequency of occurrence is one measure of pollution potential.
- b. Estimates of the total quantities of outflow from these two types of accidents, *e.g.*, side and bottom damage, are about equal and are both large enough to warrant equal concern as to design measures to mitigate outflow.

- c. Structural failures have resulted in the largest amount of outflow. These are being explored further to look for causal factors.

It is important to note that the major portion of the outflow (80 percent) resulted from a small portion (2 percent) of the total number of involvements which resulted in total loss of the vessel as indicated in Table 10.

As a check on the validity of these figures for worldwide accidents, information on incidents occurring within 50 miles of the U.S. coastline is presented in Table 11. The correlation between the data is good in the area of frequency of incidents and relative outflow by accident type.

Certain known statistical factors about casualties in U.S. waters must be kept in mind. First, collisions are the prevalent accident type, overall. Also, the surrounding physical characteristics of a port area have a great deal to do with accident types to be anticipated. Where channels are wide and the water deep, collisions would be expected to dominate. Where water is shallow with respect to the using vessel's drafts, groundings should be expected. There is a wide diversity of conditions encountered in U.S. ports and even within individual port areas. It is known that most accidents to tankers do not involve breaching of the hull. Likewise, a small number of accidents involve such high energy levels that no reasonable combination of construction features would be effective.

Effectiveness of Double Bottoms

Several attempts have been made to examine reports of tanker groundings and assess after-the-fact how effective a double bottom installed in the vessel might have been in preventing oil outflow. A major problem in any such effort is obtaining the necessary information. So is the statistical design of the study. A study of vessel accidents occurring in U.S. waters, involving tankers of all sizes which suffered bottom damage resulting in pollution during the period 1969-1973, revealed 30 such incidents (15). In 27 of these 30, that is, 90 percent of the cases, the extent of the vertical damage was less than 1/15 of the vessel's beam.

For this sample, then, we can infer that double bottoms having a height of B/15 might have been 90 percent effective in preventing oil outflow. No similar such study has been done for tanker collision involvement.

TABLE 10. Tankship Involvements, 1969-1973, Tankships Over 3000 Deadweight Tons

Type of Involvement	Number of Involvements	Total Losses		Involvements Resulting in Oil Outflow	
		No.	Oil Outflow	Involvement No.	Involvements Oil Outflow
Breakdown	355	2	29,350	11	29,940
Collision	744	7	140,779	126	185,088
Explosion	104	11	88,780	31	94,803
Fire	197	1	1,250	17	2,935
Grounding	790	12	134,449	123	230,806
Ramming	473	—	—	46	13,645
Structural Failure	515	15	322,519	94	339,181
Other	5	3	54,790	4	54,911
TOTALS	3,183	51	771,917	452	951,309

Source: J. C. Card, P. V. Ponce, and W. D. Snider, "Tankship Accidents and Resulting Outflows, 1969-1973," *Proceedings of 1975 Conference on Prevention and Control of Oil Pollution*, San Francisco, March 1975.

Exhibit X

Exhibit X

TABLE 11. Tankship Involvements Occurring Within 50 Miles of U.S. Coastline, 1969-1973
Tankships of 100 Gross Tons and Over

	No. of Incidents			No. of Incidents with Outflow			Oil Outflow Amounts		
	U.S.	Fn.	Total	U.S.	Fn.	Total	U.S.	Fn.	Total
Collision	206	121	327	13	13	26	4,655	2,276	6,931
Ramming	261	50	311	16	5	21	1,571	2,750	4,321
Collision and Ramming Subtotal	467	171	638	29	18	47	6,226	5,026	11,252
Grounding	304	83	387	20	9	29	3,886	11,991	15,877
Structural Failure	74	7	81	8	7	15	533	5,935	6,468
TOTALS	845	261	1,106	57	34	91	10,645	22,952	33,597

Source: Compiled by USCG (G-MMT-1/82) from U.S. casualty investigation reports and Lloyd's Weekly Casualty Reports, 10/74.

Problems of Double Bottoms

Two potential problems arise with double bottoms: Flooding of double bottom tanks as a result of grounding could lead to loss of buoyancy and heeling due to unsymmetrical flooding making refloating and salvage more difficult, increasing risk of loss of the vessel and greater pollution. Internal leakage of cargo into double bottoms through access fittings or cracks in inner bottom could result in accumulation of explosive vapors creating an explosion hazard and toxic vapors creating a personnel hazard for anyone entering the tank. Again, because of the lack of operating experience it is difficult to assess how serious these problems are. Installation of inert gas systems serving double bottom tanks would reduce possible hazard of explosion. [The Coast Guard has issued a notice of proposed rulemaking proposing that inerting systems be required on crude oil carriers over 100,000 DWT and crude oil combination carriers over 50,000 DWT. (12)] Overall, the

Coast Guard feels that these problems do not represent grounds for rejection of the double bottom concept.

The cost of incorporating double bottoms has been variously estimated at between 2 percent and 13 percent of new construction cost. Some of the higher estimates quoted are for providing both segregated ballast and double bottoms, so the incremental cost of double bottoms for ships already incorporating segregated ballast would be lower than the high estimates of reference (13).

The Coast Guard is not *opposed* to double bottoms, but at the time proposed rules were published in June, 1974, felt that from the accident data available, no particular type of damage so dominated the accidental release of oil that a single design solution should be stipulated in law or regulation. The data support the need to place greater emphasis on designing tank vessels from the point of view of minimizing accidental oil pollution. New tank vessels over 70,000 DWT must be designed with up to 20 percent additional volume in order to meet the segregated ballast draft and trim requirements contained in the proposed regulations. (The exact amount of additional volume depends on a number of factors including ship size, amount and location of fuel carried, and the amount of water ballast the ship carried anyway.) The Coast Guard recognized optimizing the location of this volume as defensive space could provide significant improvement toward reducing accidental outflow. A special group was convened to review the problem and examine possible regulatory approaches capable of improved protection in accident circumstances, but without specific constraints which would inhibit future development of promising design concepts not yet identified. The results and recommendations of this group are contained in Appendix C and have been incorporated in regulations setting criteria for distribution of segregated ballast.

Tank Size Limits

The alternative of reducing tank size limits is discussed in reference (17), page VI-56.

Halving of tank size limits will affect both accidental oil spillage and operational discharges. Based upon IMCO studies, reducing the tank size by a factor of two would reduce accidental oil outflow from a standard 250,000 DWT tanker by approximately 17 percent. Increasing the number of bulkheads will increase the complexity of piping and create more surface area to which oil cargo can cling during the discharge operation. This increases the amount of oil which must be cleansed from the tank and separated out during LOT and sludge removal operations. Therefore, further subdivision of cargo tanks will tend to increase the amount of oil pollution due to tanker operations thereby offsetting the reduction from accidental pollution. In addition to increased complexity of piping systems, other disadvantages of reducing tank size are increased steel weight of vessel (reduced DWT), increased chance for overfilling a tank during loading operations and longer loading times.

The formula adopted for segregated ballast distribution criteria does require decreased tank sizes in some construction options. For example, should a designer choose to use a staggered wing distribution of ballast, tank sizes must be considerably reduced for the vessel to meet the distribution criteria.

Structural Failures

As indicated in Table 10, structural failures resulted in the largest amount of outflow from tanker accidents over the five-year period, 1969-1973, and the bulk of this was from ships which were total losses. Table 12 presents results of a separate survey of 47 tankships lost, showing that loss of ship as a result of structural failure of the main hull girder was the largest single source of oil outflows.

There are a number of factors which affect the overall structural integrity of tankers over their service life. The initial strength of the vessel depends on the ship designer, ship builder, and the classification society and regulatory agencies they work with. During the vessel's operating life, its strength may be affected by the amount and distribution of the weights it carries,

the weather and sea conditions it operates in, and the deterioration due to corrosion or other causes.

The structural design of ships is a complicated process. Merchant ships must have adequate structural strength for the service they are to see, with margins for unknowns and normal wear and tear. There is little virtue in excessive strength beyond this point, since it involves excess weight, higher transportation costs, and less efficient operation. The problem is to determine "adequate structural strength" and the required margins. There are two basically different approaches to structural design — "evolutionary" and "deterministic." The first of these develops satisfactory rules and procedures on the basis of trial, experience, and modification. In the "deterministic" approach, as many of the factors affecting the structure throughout its life as possible are determined, and this information is used to prepare a design with a minimum of reference to previous experience. Loading on the ship, material properties, corrosion rates, detailed response of the structure to each state of loading, and much more must be quantified, and then the effect of these things on the probable behavior of the structure during its lifetime taken into account, largely by calculation (18).

TABLE 12. Description of Loss of Structural Integrity for 47 Tankship Losses, 1969-1973
Tankships Over 10,000 Deadweight Tons

Description	Number	Oil Outflow (Long Tons)
A. Loss of structural integrity of hull caused primarily by external forces or where local material conditions deteriorated. No explosion or fire was associated with the accident. These may be broken down into:		
1. Structural failure of main hull girder from excess bending or shear loading	12	243,619

2. Local structural failure of hull envelope		
a. Failure of hull penetration	2	36,750
b. Local hull plating failure	2	39,169
c. Unknown local structure failure	1	34,000
3. Hull damage caused by collision or grounding		
a. Collision	2	4,138
b. Grounding	11	187,726
SUBTOTAL	30	545,402
B. Loss of structural integrity from damage caused primarily by explosion or fire or where explosion or fire contributed to loss of structural integrity. These may be broken down into:		
1. Explosion or fire initiated in own ship cargo tanks	12	90,030
2. Explosion or fire set off by vessel collision or grounding		
a. Collision	4	136,163
b. Grounding	1	2,500
SUBTOTAL	17	228,693

Ship structural design currently uses a combination of these two approaches, with a growing tendency toward "deterministic" methods where no relevant previous operating experience exists. A completely deterministic approach is not feasible, however. In general, the data and statistical techniques for calculating risks of failures are not presently available. Uncertainties concerning loadings, quality of material and construction, and accuracy of analysis are taken into account by the use of margins of safety against damage selected by the designer with the help and supervision of the classification societies and regulatory agencies. Once information needed to calculate risks of failure is available, the problem of determining "What is an acceptable risk of failure?" will remain. (18)

Strength during a vessel's life may be affected by overloading.

improper load distribution, encountering rougher weather or seas than it was designed for, or deterioration of structure due to corrosion.

Limiting draft of a vessel may be determined by structural strength, freeboard needed to prevent damage due to boarding seas, or reserves of buoyancy or stability needed after loss of hull integrity. The 1966 Loadline Convention contains no strength standard, inasmuch as the various assigning authorities were not in agreement as to a proper standard. There was a universal feeling that for larger ships freeboards could safely be reduced. The final freeboard table for large ships, particularly for tanker and similar types, showed greatly reduced freeboards at the upper limit of length. However, in order to obtain the reduced freeboard, a ship must meet certain standards of subdivision and stability in a damaged condition. As a result, it is generally felt that ships will be safer, despite the reduced freeboards, because of the subdivision requirement. (19)

The requirement contained in the 1966 Loadline Convention for load distribution information to be provided to the Master of a ship will help to eliminate improper load distribution, perhaps a greater risk than overloading.

Deterioration of a ship's structure due to corrosion or wastage is also a complicated problem. In the past it has been taken into account by including a wastage allowance in the ship's scantlings. The proper allowance, being based on a predetermined period before the strength of the structure is reduced to the established minimum, is impossible to determine with exactness. Corrosion itself is a complex electrochemical phenomenon affected by a multitude of factors. (20) Loading systems, cathodic protection, and materials improvements have been used in various ways to reduce corrosion effects. Periodic inspection and maintenance to locate and correct abnormal wastage problems are also essential.

Collection and analysis of accident statistics as a check on the structural performance of tankers is important, but this information has not generally been collected and made public

worldwide, although presumably the classification societies have a good deal of such information. To provide input for revising requirements (either loadline or wastage allowance requirements) this information should include information on factors noted above.

Studies of tanker accidents seem to show an age dependency of structural failures with most failures occurring after ships are over 12-15 years of age. This is probably due to the combination of a number of factors — latent design and construction defects, deterioration of vessel's structure with age, extreme sea conditions, or other factors we do not know about. (One of the most troublesome problems is obtaining information after an accident has occurred.) Accidents involving U.S. vessels or foreign vessels in U.S. waters are investigated and published by the U.S. Coast Guard and the National Transportation Safety Board. Some other maritime nations similarly investigate and publish reports of serious accidents involving their vessels. A number of countries do not, so information on many accidents is very sketchy or nonexistent. Are these accidents the result of conditions which do not apply to other tankers (poor workmanship in one construction yard during one time period, design details unique to one vessel or class of vessel, lack of or failure of protective coating, etc.) or to more general conditions (widespread overloading, corrosion, etc.)? No one really knows.

What alternatives are available for reducing tanker structural failures? For new ships, greater initial strength could be required (increased safety factor), but how much? This would result in an increase in the amount of steel used in these ships, increased weight, increased cost, etc. The allowable loading of new and existing vessels could be reduced by increasing required freeboard and changing loadline assignments. (Unknown here is how widespread the practice of overloading is at present. It is difficult to detect overloading. Mere observation of a vessel at start and end of a voyage is not sufficient to determine that a vessel was not overloaded at some point in the trip because of the route and loadline zones transited. Many masters may be unaware of the hazards of overloading. The effects of overloading may be

cumulative — a vessel may be overloaded and still complete the voyage safely for many voyages before it is lost.) The periodic inspection of a tanker's hull to detect signs of deterioration which might lead to structural failure is a major task and it is growing as larger tankers enter service. The immensity and difficulty of this task alone may require a change in design allowances for corrosion and safety factors.

Other Accident Types

Fires and explosions are not major sources of oil outflow. They are serious safety problems from personnel and property damage standpoint and efforts are currently underway in the U.S. and internationally to upgrade fire protection systems on tankers and to require tank inerting systems. Reducing fires and explosion will also reduce accidental pollution, but the effect will be small.

The problem of breakdowns and equipment reliability were discussed earlier. The vessel's crew and owners (or operating company) play a major role in maintaining a vessel in satisfactory condition. Breakdowns in the past have contributed only a small amount to oil outflows — they are a safety and operating efficiency problem.

4.5 Future Actions by the Coast Guard

As indicated earlier, these regulations are one of a series of steps to reduce oil pollution from tankers. Some of the other steps to be taken are described below:

1. Specifications for oil/water separators, oil content monitors, and oil interface detectors are to be developed and published.
2. Proposed regulations to cover ships other than tankers which have their certificates endorsed to carry small amounts of bulk liquid cargo are to be developed and published for comment.
3. Proposed rules on marine traffic requirements are to be developed and published for comment as a followup to the Advance Notice published June 28, 1974.

4. The Coast Guard will encourage ratification of the 1973 Marine Pollution Convention by the United States and work to bring it into force internationally. The Coast Guard will continue to participate in meetings of the Marine Environmental Protection Committee of IMCO and work toward international solutions to marine pollution problems.
5. The need for additional construction requirements for inland tank barges is being analyzed and proposed regulations will be drafted in the future.
6. Proposed rules for U.S. tankers in foreign trade and foreign tankers entering U.S. waters will be developed and published for comment in order to have final rules effective as required by Title II of PWWSA.
7. Regulations to implement the 1973 Marine Pollution Convention for ships other than tankships will be developed. These regulations will apply to the discharge of oily ballast and bilge water at sea from vessels other than tankers.
8. The Coast Guard will work with other Federal agencies and appropriate facets of the marine industry to see that required reception facilities are available to reduce oily bilge and product tanker discharges to the sea.
9. The Coast Guard will continue to work on ship controllability problems to reduce collisions, rammings, and groundings.

5. PROBABLE ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED

The overall effect of these regulations will be to reduce the amount of oil entering the oceans as indicated in Section 3. No adverse environmental effects are anticipated as a result of this action.

6. RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

Both short-term and long-term fates and effects of petroleum hydrocarbons in the marine environment are analyzed in the NAS Report, *Petroleum in the Marine Environment* (reference 1). So far as the Coast Guard can determine, these regulations do not involve any tradeoffs between short-term environmental gains at the expense of long-term losses or vice versa. Nor are any future options foreclosed.

7. IRREVERSIBLE AND IRRETRIEVABLE COMMIT- MENTS OF RESOURCES

No significant irreversible and irretrievable commitments of resources are involved in this proposed action.

8. COMMENTS ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT AND COAST GUARD RESPONSES

Comments on the draft statement were requested from the following (* indicates comments were received and are contained in this section):

- Department of the Interior
- *Environmental Protection Agency
- *Department of Defense
- *Department of Commerce
- *Department of Transportation
- Department of State
- Sierra Club
- Connecticut Citizens Action Group
- *Center for Law and Social Policy (representing a number of groups (CLSP))
- *American Petroleum Institute
- *American Institute of Merchant Shipping

- American Association of Port Authorities
- American Maritime Association
- American Waterways Operators, Inc.
- Shipbuilders Council of America
- Environmental Policy Center
- Coalition Against Oil Pollution
- *National Audubon Society (AUD)

In addition, comments were received from the State of New Jersey, Department of Environmental Protection.

(Here would appear pages 87-208 of the document which have been omitted in printing.)

NATIONAL AUDUBON SOCIETY

August 6, 1974

(Part of letterhead omitted in printing.)

Captain Richard Brooks
Executive Secretary
Marine Safety Council (G-CMC/82)
Room 8234
U.S. Coast Guard
Washington, D.C. 20590

Captain S.A. Wallace
Chief, Marine Environmental Protection Division
U.S. Coast Guard (G-WEP/73)
Washington, D.C. 20590

Dear Captain Brooks and Captain Wallace:

The National Audubon Society has reviewed the interim rules and regulations for protection of the marine environment relating to tank vessels engaged in domestic trade, which were published in the Federal Register June 28, 1974. We have also reviewed the draft environmental impact statement that discusses those interim regulations.

We are combining our comments on the interim regulations

and the draft impact statement in this letter, a copy of which is being sent to each of you.

On January 26, 1973, the Coast Guard published in the Federal Register an advance notice of proposed rulemaking under the Ports and Waterways Safety Act of 1972. The advance notice stated that the Coast Guard was considering proposing regulations "which would require a segregated ballast capability" on tank ships, and that the "segregated ballast capacity would be achieved in part by fitting, throughout the cargo length, a double bottom

* * *

We were pleased to note at the time that the Coast Guard was considering such regulations to protect the marine environment from oil pollution, and our Washington representative, Ms. Cynthia E. Wilson, transmitted our views to the Coast Guard in a letter dated March 8, 1973, in which we urged the Coast Guard to issue such regulations.

On July 5, 1973, the Coast Guard published in the Federal Register a supplement to the advance notice of rulemaking in which it was announced that further action was being deferred pending the outcome of the October, 1973 International Conference on Marine Pollution.

The interim regulations published June 28, 1974 constitute a resumption of the rulemaking process announced on January 26, 1973.

And, we regret to say, the interim regulations published June 28, 1974 also constitute a retreat by the Coast Guard from the segregated ballast and double bottom approach originally contemplated.

We recognize that when implemented, the interim regulations issued June 28 are likely to bring about a reduction in the amount of oil pollution from tankers, and we applaud you for that small step forward. But the interim regulations are needlessly timid and too small a step forward.

Moreover, the first notice of proposed rulemaking, in January, 1973, indicated that the Coast Guard was considering applying the segregated ballast and double bottom requirements to tank barges as well as tank ships. The June 28 notice contained the unhappy news that barges are not covered by the interim regulations.

We do not pretend to have expertise in the design, construction, and operation of oil tankers and barges. However, we are somewhat familiar with the studies and reports published by the Coast Guard and others on this subject. And those studies and reports make it clear that technology is now available to require greater protection of the marine environment from oil pollution by tankers and barges than the Coast Guard is requiring in its interim regulations.

The interim regulations require segregated ballast tanks only for new tankers of 70,000 tons deadweight or more. Smaller tankers and all barges are not required to have segregated ballast tanks. Oily discharges from new vessels will be limited to a maximum of 1/30,000 of the cargo. And double bottoms are not required.

As a result, the regulations will assure continuation of unnecessary oil pollution of the marine environment in normal operations, albeit to a lesser degree than now prevails. And because of the failure to require double bottoms, the regulations will assure continuation of the unnecessary threat of catastrophic pollution in event of the grounding or collision of a single supertanker without a double bottom.

In sum, the interim regulations are inadequate. We question the implication in the preamble to the regulations that the United States cannot do more, now, to reduce oil pollution of the marine environment because, in part, of the limitations of the International Convention for the Prevention of Pollution of the Sea by Oil. The United States in the past has taken the initiative on oil pollution control by enacting more stringent regulations for oil operations within our national jurisdiction than other nations. We believe the United States should now take the lead and do

the same for tank vessels operating within our jurisdiction or carrying the U.S. flag abroad.

We therefore urge the Coast Guard to reconsider the interim regulations with a view to requiring segregated ballast and double bottoms for all new tankers, and similar or other appropriate pollution control requirements for barges.

We now want to comment on the draft environmental impact statement.

On Page 5, the draft statement says: "The proposed regulations require such (oil-water separating and filtering) equipment; but the installation of the equipment will not be required until after the effective date of regulations publishing specifications, testing, labeling and approval procedures for the equipment."

There is no indication when the necessary regulations will be issued. What is the anticipated date of publication of the necessary regulations? What is the anticipated date for the mandatory use of the equipment? We urge that the regulations be published and made effective as soon as possible.

On Page 54, the draft impact statement says: "Segregated ballast for all tankers would help to eliminate the problem of oil residues to a certain degree, but the economic consequences of this alternative for the U.S. tank fleet are unreasonable."

The "economic consequences" are not detailed, however. What would be the added cost of building segregated ballast tanks into new ships? What would that additional cost for environmental protection amount to per barrel of oil? Per gallon of gasoline to the consumer?

We agree with the comment that "present levels of oil pollution represent a serious threat to the marine and coastal environment." (Page 22.) And because of that threat, we cannot agree with the Coast Guard's decision not to require segregated ballast for all tankers and not to require double bottoms on new

vessels. And we must take exception to comments in the draft statement that attempt to rationalize the Coast Guard's decision not to require double bottoms.

On Page 5, the statement says: "The large number of existing vessels would preclude any immediate significant reduction in oil outflow due to requiring double bottoms on new vessels."

Of course there would be no "immediate significant reduction" in oil pollution if double bottoms were required, for as the draft statement notes on Page 55: "Deliveries of newly ordered double bottom tankers, resulting from the imposition of a double bottom requirement, could not be reasonably expected before 1978."

But the point is that regulations issued today should be based on planning for the future. By not requiring double bottoms on new vessels, the Coast Guard is shunning its responsibility and discarding an opportunity to minimize oil pollution in the future.

As for what is a "significant" reduction in oil pollution, any reduction of what is already "a serious threat to the marine and coastal environment" is a desirable goal.

On Page 55, the draft statement mentions projected world oil transportation needs into the 1990's. However, the source of the projections is not given and no data is given to support the Coast Guard's conclusions.

On Page 35, the draft statement notes that in 1972 "U.S. flag ships discharged 496 tons in 5 separate casualties." The draft statement then says: "It is clear from the above that a double bottom fitted only in U.S. tank ships in the domestic trade would prevent only a fraction of the total outflow and that efforts in preventing casualties should be emphasized." The statement also says: "Using a data base of one year may be misleading in that it may represent an exceptionally favorable year with respect to U.S. tank vessel accidents."

We agree that using the figures for only one year may be misleading. Thus we wonder if 1973 and early 1974 figures are yet available? But more importantly, we question the Coast Guard's decision not to require double bottoms on the basis, in part at least, of what may admittedly be a "misleading" data base.

And we also question why double bottoms need be "fitted only in U.S. tank ships" when, as the draft statement says on Page 1, "the Coast Guard must extend the applicability of these proposed regulations to encompass U.S. tank vessels engaged in foreign trade and foreign tank vessels entering the navigable waters of the United States" before January 1, 1976. (Emphasis added.) It is therefore clear that requiring double bottoms would prevent more than is implied by the phrase, "only a fraction of the total outflow."

Similarly, on Page 56, the draft statement says: "Oil outflow would only be significantly reduced if a U.S. vessel engaging in domestic trade were involved in the casualty." On the face of it, that has to be considered misleading since the Coast Guard must, by January 1, 1976, apply the regulations to foreign tank vessels entering U.S. waters.

On Page 37, the draft statement notes that areas within fifty miles of land "are most ecologically sensitive and most subject to the pejorative effects of oil." On Page 44, the draft statement says that "construction of large tank vessels . . . could lead to the possibility, in the event of a single accident, of catastrophic environmental pollution." On Page 48, the draft statement says: "Given the potentially deleterious effects of oil pollution, this level (65,000 tons of oil pollution annually) is clearly unacceptable."

We submit that those statements can be used to justify a requirement for double bottoms. Supertankers as large as 476,025 tons already sail the oceans. Even larger tankers are on order. In not too many years, supertankers may well be bringing oil to offshore deepwater "ports" or terminals in U.S. waters. If the Coast Guard considers 65,000 tons of oil pollution annually "clearly unacceptable," what of a single accident involving a

tanker of 100,000 or 200,000 or 300,000, or 400,000 tons or more, in the "ecologically sensitive" coastal waters of the United States? It would indeed be a case of "catastrophic environmental pollution."

(We don't know whether a double bottom would have prevented the tanker Torrey Canyon from spilling its oil into the sea when it went aground in 1967. But we do know that at least one tanker with four times greater capacity than the 117,000-ton Torrey Canyon is already sailing the seas.)

On Page 2, the draft statement says that the Coast Guard received many comments on "the high initial cost associated with double bottoms." What is the additional cost of building a tanker or a barge with a double bottom? What does that cost come to, in the case of a 400,000-ton tanker, in terms of additional cost per gallon of gasoline to U.S. motorists?

On Page 51, in discussing the alternative of "more stringent requirements than the 1973 Convention," the draft statement says: "Stricter measures could certainly be construed by foreign observers as a portent of the future and evidence of intent of the U.S. government *not to abide* by the provisions of the Conference agreement." (Emphasis added.) On Page 53, the draft statement notes that "zero discharge" has been stipulated by the Department of the Interior for tank vessels that will transport oil from the Alaska pipeline terminal at Valdez. (Indeed, the permit for the Alaska pipeline contains this stipulation: "It is the policy of the Department of the Interior that there should be no discharge of oil or other pollutant into or upon lands or waters.")

We want to make several points here. First, we find it difficult to believe that "stricter measures" of oil pollution control by the United States would be considered evidence of intent "not to abide" by the Convention. "Not to abide" surely means not to act in accord with the Convention in the sense of failing to meet its minimum requirements, of doing less than the Convention mandates. Second, if stricter requirements for tank vessels operating in U.S. waters would be considered as evidence of intent "not to abide" by the Convention, isn't the "zero discharge"

requirement for tankers that will haul oil from Valdez also an intent "not to abide" by the Convention? And third, is there any provision in the Convention that prohibits a nation from setting stricter standards for its own flag vessels or its own waters?

Moreover, we note with interest what Senator Warren G. Magnuson and Senator Norris Cotton, chairman and ranking minority member, respectively, of the Senate Commerce Committee, said in their March 13, 1973 letter to Admiral Bender: "Requiring that new tankers incorporate segregated ballast tanks and double bottoms, and be capable of retaining wastes on board for shoreside disposal is wholly consistent with the purposes of that Act (P.L. 92-340, the Ports and Waterways Safety Act of 1972) and will make a significant contribution to protection of the marine environment."

The draft impact statement says on Page 51 that if the U.S. would enact stricter measures than required by the Convention, "ultimately this would encourage other nations to establish unilateral requirements, to the detriment of a coordinated international approach."

If, by imposing stricter standards, the United States or any other nation would stimulate stricter standards by other nations, we suggest that would be an excellent way to stimulate the slow-moving IMCO to greater and faster action than it has so far demonstrated. A coordinated international approach is certainly desirable. But we should accept the reality that international organizations move forward slowly and ponderously. The international Convention should be viewed as the minimum for all nations to follow, not as the maximum. And certainly the United States, which has so often proclaimed leadership in pollution control and environmental protection, and which is the free world's largest user of oil, should take the leadership in protecting the environment from pollution by oil.

The Coast Guard itself noted in the draft impact statement that "present levels of oil pollution represent a serious threat to the marine and coastal environment." Half-measures are not enough to defuse that threat.

In sum, the draft environmental impact statement — like the interim regulations — is inadequate. The impact statement and the regulations seem to be motivated more by cost and political considerations than by environmental considerations.

We urge that the interim regulations be strengthened and that a new adequate environmental impact statement be issued.

In past meetings of international and regional organizations, the United States has proposed a policy of no oil discharges whatsoever anywhere in the world. Our nation cannot impose that standard throughout the world, of course. But our nation can and should require zero discharge of oil by all tank vessels operating within U.S. waters and by all U.S. flag ships operating anywhere in the world. And to the degree that zero discharge technology is available, it should be used — and as soon as possible.

The oceans, Homer wrote, are "the source of all." We must protect that source — of our water, of much of our oxygen, of much of our protein — from oil pollution to the greatest degree possible.

P.S.: We continue to associate ourselves with the views presented on our behalf by the Center for Law and Social Policy at the hearings on July 31, 1974.

EJS:SMS

Sincerely,
Elvis J. Stahr
President

c.c.: Senator Warren Magnuson
Representative Leonor K. Sullivan
Senator Norris Cotton
Representative John M. Murphy
Secretary of Commerce Dent
Secretary of Interior Morton
Administrator, Environmental Protection Agency
Chairman, Council on Environmental Quality

Admiral Chester R. Bender, Commandant, U.S. Coast Guard

**Response to National Audubon Society Comments
Contained in Letter Dated August 6, 1974**

Comment

We recognize that when implemented, the interim regulations passed June 28 are likely to bring about a reduction in the amount of oil pollution from tankers, and we applaud you for that small step forward. But many studies and reports make it clear that technology is now available to require greater protection of the marine environment from oil pollution by tankers and barges than the Coast Guard is now requiring in its interim regulations. The interim regulations are inadequate. As a result, the regulations will assure continuation of unnecessary oil pollution of the marine environment in normal operations, albeit to a lesser degree than now prevails. And because of the failure to require double bottoms, the regulations will assure continuation of the unnecessary threat of catastrophic pollution in event of the grounding or collision of a single tanker without a double bottom. (AUD, p. 210)

Response

At issue here is the question of how fast efforts to reduce or eliminate oil pollution should proceed, and whether we should have a cooperative international (slower) effort or a "go-it-alone" unilateral (faster) program.

The Coast Guard believes that U.S. participation and leadership in an international program, supplemented where appropriate with special national requirements, will be the most effective alternative in the long run and provides a reasonable protection of the marine environment.

On the basis of this belief, the Coast Guard is issuing regulations implementing provisions of the 1973 Marine Pollution Convention for U.S. tank vessels in domestic trade, with the announced intention of applying similar regulations to U.S. tank vessels in foreign trade and foreign vessels entering U.S. waters

in 1976. The Coast Guard will continue to participate in IMCO marine pollution meetings and to urge stronger international requirements where necessary and practical. Efforts to evaluate and establish appropriate national requirements which supplement and complement Convention requirements will also continue.

Comment

There is no indication when regulations on oil-water separating equipment and oil-content monitors will be issued. What is the anticipated date of publication of the necessary regulations? What is the anticipated date for mandatory use of the equipment? We urge that the regulations be published and made effective as soon as possible.

Response

It is still not possible to give a firm date for publication of regulations for oil-water separators and oil-content monitors. Work has been underway over the past year on development of test specifications and steps to provide equipment test facilities. The Coast Guard has been working with appropriate facets of the U.S. marine industry and other government agencies and also with the Marine Environmental Protection Committee of IMCO. Although the delay is frustrating, the Coast Guard feels that regulations must be based on facts and that developing and carefully testing good specifications is essential. Once specifications have been published and devices tested and approved, a better assessment can be made as to a reasonable deadline for mandatory installation and use of the equipment.

It should be pointed out, however, that many vessels are already being equipped with oily water separators to treat oily bilgewater. Most of the world's tankers are also using load-on-top techniques, most without the benefit of oil content monitors. While oil content monitors will improve and make load-on-top (or, more properly retention-on-board) easier and more effective, the improvement is small compared to the much larger improvement resulting from a tanker operator's commitment to use LOT methods at all. The greatest improvement will come from rapid

adoption of the discharge criteria contained in the 1973 Marine Pollution Convention, their entry into force as international law, and the effective enforcement of that law.

Comment

The economic consequences of requiring segregated ballast are not detailed. What would be the added cost of building segregated ballast tanks into new ships? What would the additional cost for environmental protection amount to per barrel of oil? Per gallon on gasoline to the consumer? (AUD, p. 211)

Response

The draft environmental impact statement has been revised to include a more thorough discussion of the costs of the regulations (including segregated ballast). (See pages 53-56.) Estimates of the increase in construction cost due to providing segregated ballast spaces range between 5% and 10% with increases in required freight rate of about 5% to 10%. As shown in Table 9, page 56, under the most pessimistic set of assumptions, these increased transportation costs are estimated to be less than 0.2 cents per gallon.

Comment

We find it difficult to believe that "stricter measures" of oil pollution control by the United States would be considered by foreign observers as evidence of an intent "not to abide" by the Convention. If stricter requirements for tank vessels operating in U.S. waters would be considered as evidence of intent "not to abide" by the Convention, isn't the "zero discharge" requirement for tankers that will haul oil from Valdez also an intent "not to abide" by the Convention? Is there any provision in the Convention that prohibits a nation from setting stricter standards for its own flag vessels or its own waters? (AUD, p. 213)

Response

The phrase "not to abide" used in the draft EIS was a poor choice of words. There is nothing in the Convention prohibiting

a nation from setting stricter standards for its own vessels or its own waters, and any nation doing so would certainly be "abiding" by the Convention.

The thought that we meant to convey is that there is a possibility that the 1973 Marine Pollution Convention will not be adopted and come into force worldwide. (It must be ratified by at least 15 nations which must among them control 50% of the world's gross registered tonnage.) The United States is not a "world power" in terms of shipping, but we have been a leader in international pollution control efforts. We fought hard for a stronger agreement at the 1973 Marine Pollution Conference — without our efforts the results might have been much weaker. Other nations will be looking to us to see what we are going to do — adopt and implement the Convention, or unilaterally pursue our own course of setting stricter construction standards. Because of the size and character of the worldwide tanker oil pollution problem and the results achievable through the Convention, adoption and implementation of the Convention must be the first order of business. And the actions we take must send that message to the world's major shipping nations.

The Valdez "zero discharge" standard is an operational requirement applicable to one specific loading port, which is quite a different matter from one nation setting construction standards that will prohibit or restrict certain vessels from being used in certain trades. In view of this, and since the Valdez trade is restricted to U.S. ships, the Coast Guard does not see how the Valdez requirement could affect foreign impressions of U.S. intentions. What we do about adopting and implementing the 1973 Marine Pollution Convention is very important to foreign attitudes and the fate of the Convention.

Comment

If, by imposing stricter standards, the United States or any other nation would stimulate stricter standards by other nations, we suggest that would be an excellent way to stimulate the slow-moving IMCO to greater and faster action than it has so far demonstrated. A coordinated international approach is certainly

desirable. But we should accept reality that international organizations move forward slowly and ponderously. The International Convention should be viewed as a minimum for all nations to follow, not as the maximum. And certainly the United States, which has so often proclaimed leadership in pollution control and environmental protection, and which is the free world's largest user of oil, should take the leadership in protecting the environment from pollution by oil. (AUD, p. 214)

Response

The Coast Guard feels that a coordinated international approach is both desirable and essential. We have tried to explain why, because of the nature of the tanker oil pollution problem, we feel such an approach is essential. (Please refer to pages 3 through 8.) If imposing stricter standards would inspire other nations to do the same or spur IMCO to greater and faster action, the Coast Guard would favor it. But, as indicated on page 7, the Coast Guard does not think that would be the effect of such action. The Coast Guard agrees that international organizations seem to move forward at an almost unbearably slow pace sometimes, and that the 1973 Marine Pollution Convention should be viewed as a minimum for all nations to follow. But the Convention will not even become the legal minimum standard if it doesn't come into force. We agree that the United States should take the leadership in protecting the environment from pollution by oil. The Coast Guard feels that ratification of the 1973 Marine Pollution Convention, action to implement it nationally, and encouragement of other nations to ratify it, are the best ways to demonstrate such leadership at this point in time.
(Pages 221-315 of document omitted for printing.)

FIGURES

(References to page numbers omitted in printing.)

Figure 1 The Tanker Oil Pollution Problem

Figure 2 Sources of the Estimated 1.35 Million Tons of Oil Entering the Oceans Each Year from Tankers

Figure 3 Inputs for Estimating Effects of Regulations

TABLES

Table 1 Budget of Petroleum Hydrocarbons Introduced into the Oceans

Table 2 U.S. and Worldwide Tankship Fleets

Table 3 Transportation of Oil by Water into U.S. Coastal Ports

Table 4 Estimated Annual Oil Inputs to the Oceans from Tankers

Table 5 Applicability of Requirements to U.S. Tankers in Domestic Trade

Table 6 Comparison of Oil Inputs from Tank Cleaning and Ballasting, U.S. Tankships in Domestic Trade—Amounts Presently Permitted Versus New Discharge Standard

Table 7 Expected Effects of Regulations on Oil Inputs to the Sea From U.S. Tankers

Table 8 Action Required by Regulations

Table 9 Typical Transportation Costs for Tanker Oil Shipments

Table 10 Tankship Involvements, 1969-1973, Tankships Over 3000 Deadweight Tons

Table 11 Tankship Involvements Occurring Within 50 Miles of U.S. Coastline, 1969-1973

Table 12 Description of Loss of Structural Integrity of 47 Tankship Losses, 1969-1973

(Pages 221-315 omitted in printing.)

EXHIBIT XX

**UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF WASHINGTON
THREE-JUDGE COURT**

Revision Team Draft 2

7/7/75

INDUSTRIAL DISTRICTS

1.0 General Provision—Purposes:

The purposes of the industrial sections of this ordinance are to protect industrial usage within the unincorporated areas of the County, to insure compatible land uses, to preserve the physical and social environment, and to encourage orderly development of Whatcom County.

HEAVY IMPACT INDUSTRIAL DISTRICT (HIID)

1.0 Purpose:

To establish areas and standards for industrial uses which have a heavy impact on the environment and on other land uses and to provide a protection from incompatible intrusions on these industries within the established district.

2.0 Permitted Uses:

2.1

Subject to the provisions of this ordinance, all uses are permitted unless specifically prohibited.

2.2

Permit required—prior to commencing construction, alteration, expansion, land preparing, or operation, each use in this district shall obtain a heavy impact industrial development permit issued by the Whatcom County Board of County Commissioners after hearings and recommendations of the Planning Commission in accordance with Section 3.0 of the ordinance; provided, however, the permit requirement of this section may be waived by the Zoning Officer if the applicant establishes with reasonable certainty that the proposed industrial use or project will meet the criteria of Section 4.0.

3.0 Procedure:

3.1

Application forms and consultation regarding information required for a permit may be obtained from the Zoning Officer. The application shall include an environmental assessment, an assessment of the social and economic impact of the proposed industrial use, a description of proposed buildings, machinery and processes, traffic and transportation plans, drainage and effluent disposal plans, a site plan drawn to scale, the status of any other permits applied for or expected to be required by any other governmental agency, and any other information which the applicant deems necessary to support the application or which the Zoning Officer requests. In compiling the application, the applicant should specifically address the criteria listed in Section 4.0.

3.2

Upon the receipt of the application, the Zoning Officer shall review the materials within fifteen days. If additional information is required from the applicant, an additional fifteen days shall be allowed for review after that information is received.

3.3

Zoning Officer Evaluation—The Zoning Officer shall evaluate the application, consulting the planning staff, governmental agencies having special expertise and, when necessary, private experts. After evaluating the application, the Zoning Officer shall declare the application exempt from the permit requirements of this ordinance as provided in Section 2.2 or refer the matter to the Planning Commission and the Board of County Commissioners for public hearings and consideration of the issuance of the heavy impact development permit.

3.4

Exempt Status—Appeal—Any decision by the Zoning Officer to exempt an application from the permit requirements of this ordinance is appealable to the Board of County Commissioners. Immediately upon declaring an application exempt, the Zoning Officer shall cause a notice of said action to be published in the official county newspaper and shall send written notice to any

person or organization which has requested in writing to be notified of such exemptions. Any person wishing to appeal that decision shall give notice of appeal to the Zoning Officer within ten (10) days. Upon receipt of said notice of appeal, the Zoning Officer shall have the matter set on the County Commissioner's calendar for the next available hearing day and notify the appellee. At the hearing, the Commissioners shall hear testimony and within five days from said hearing decide if the application is exempt or a permit required.

3.5

Referral—to the Planning Commission/County Commissioners—When the Zoning Officer determines that the application is not exempt, he shall refer the matter to the Planning Commission for public hearing. The procedure for notice and hearing shall be the same as provided for obtaining preliminary plat approval in 8.20.070 through 8.20.100 of the Whatcom County Code, except where such procedure is in conflict with specific provisions of this ordinance. The time limit for completing this procedure shall be 120 days, to commence after the completion and circulation of any draft environmental impact statement required or anticipated by any governmental agency at the time of referral of the permit application by the Zoning Officer.

3.6

The Planning Commission shall conduct a public hearing after the completion and circulation of any Draft Environmental Impact Statement required or anticipated at the time of referral of the permit application by the Zoning Officer. At that hearing, the Planning Commission shall consider whether the proposed use will be compatible with the criteria listed in Section 4.0 and shall make written findings and recommendations as follows, either:

- (1) That the proposed use is compatible with all of the criteria listed in Section 4 and granting of the development permit is recommended; or
- (2) That the proposed use is compatible with certain of the criteria in Section 4 but that certain deficiencies in meeting specific items exist, and that a development

permit should be granted if appropriate modification of the application is made to correct such deficiencies; or

- (3) That the proposed use is generally incompatible with the criteria in Section 4 and recommending that the Development permit be denied.

3.7

Submittal to County Commissioners — Within ten (10) days after public hearing of the application, the Planning Commission shall make a written Planning Commission Report of its findings and recommendations with respect to the application and shall forward it to the County Commissioners.

3.8

County Commissioners Procedure — The County Commissioners shall, within thirty (30) days of the receipt of the Planning Commission Report, review such findings and recommendations of the Planning Commission at a regular public meeting, unless it then appears that a decision has been made by any governmental agency to prepare an environmental impact statement; in which case the thirty (30) days shall not commence until the completion and circulation of the statement.

3.8

Ratification of Recommendations—If the County Commissioners should approve, without change, the findings and recommendations of the Planning Commission, they shall, within ten (10) days of such meeting, issue or deny the Development Permit.

3.9

Modification of Recommendations — If the County Commissioners shall determine that modifications of the findings and recommendations of the Planning Commission are necessary, the matter shall, within ten (10) days of such meeting be referred back to the Planning Commission for further deliberation, or be set for public hearing before the County Commissioners upon due notice to the applicant and the public, such hearing to be held within thirty (30) days of such determination or within such period as agreed to by the applicant.

3.10

Determination of Application—Issuance or denial of the Development Permit by the County Commissioners shall be accompanied by written findings and a copy provided the applicant. Such action shall be taken within ten (10) days of final consideration by the County Commissioners.

4.0 *Criteria for Issuing Permit:*

4.1

Prior to issuing a development permit, the Board of County Commissioners shall have written recommendations regarding the following from the Planning Commission. As a precondition to granting a development permit, the Board of County Commissioners shall consider the facts and circumstances of the application, and shall make findings in writing that the applicant has established by clear and convincing evidence that the applied for use at the proposed location:

- (1) Will comply with the development standards (Section 6.0) and the performance standards (Section 7.0) specified in this ordinance.
- (2) Will be in accordance with the Whatcom County Comprehensive Plan and any laws or regulations which may be applicable.
- (3) Will not substantially interfere with the operation of existing industries in the District, and will not substantially detract from the social or natural environment beyond the boundaries of the Heavy Impact Industrial Zone.
- (4) Will be served by, or will be provided with essential utilities, facilities, and services such as highways, roads, drainage structures, electricity, water supply, sewage disposal facilities, and police and fire protection. Standards for such utilities, facilities and services shall be those currently accepted by the State of Washington, Whatcom County, or the appropriate governmental agency or division thereof.
- (5) Will not impose uncompensated requirements for public expenditures for additional utilities, facilities and services taking into consideration tax revenues generated by the industrial use, and will not impose uncompensated costs on other property owners.

- (6) Will be appropriately responsive to any Environmental Impact Statement, by weighing environmental costs along the social and economic impacts.

4.2

The Board of County Commissioners may impose reasonable and specific conditions precedent to establishing the use in order to protect the natural environment of the County, the neighboring industry, or the health, safety, and general welfare of the people of the County.

5.0 Prohibited Uses:

The following uses are prohibited in the Heavy impact industrial District:

- (1) Dwellings for human habitation except as required by an industry to conduct its primary business.
- (2) Schools, churches, hospitals, hotels, and motels.
- (3) Commercial uses except those operated by industrial users and used exclusively by their employees and guests.
- (4) Commercial recreation.
- (5) Agricultural, and private and public recreational uses, except those uses which do not involve permanent structures and which are compatible with the reasonable level of performance expected in the Heavy Impact Industrial District, provided, however.
- (6) Recreational uses operated by the industrial users primarily for their employees and guests shall not be included in this prohibition. Except with regard to pre-existing agricultural and private and public recreation uses, industry operating within the standards established by this ordinance shall not be liable for nuisance claimed by recreational and agricultural uses operating within the Heavy Impact Industrial District.
- (7) The following uses are prohibited for a period of five years from the effective date of this ordinance at which time they shall become unclassified uses:
 - (a) Deep water port facilities designed to handle ships in excess of 200,000 dead weight tons.

- (b) Metal smelting, except the alteration, improvement, reconstruction, or expansion of a building structure or process which existed prior to the enactment of this ordinance.

- (c) Nuclear power plants.

6.0 Development Standards:

6.1

The minimum lot size shall be one acre.

6.2

The maximum site coverage for all permanent structures shall not exceed 75% of the lot size.

6.3

Any permanent structure shall be at least 50 feet from the nearest property line; 200 feet from any adjacent non-industrial zoning district; and 100 feet from any public right-of-way, provided that fences shall be allowed to be placed on property lines which are not adjacent to public right-of-ways and ten feet from property lines adjacent to public right-of-ways so long as no traffic hazards are created.

6.4

The building setback requirements of subsection 6.3 shall be increased by one (1) foot for every foot by which the structure shall exceed 50 feet in height.

6.5

Users shall be responsible for maintaining an orderly appearance of all properties and shall be responsible for assuring the care and maintenance of any natural growth where appropriate.

6.6

Loading areas must be located in such a manner that no loading, unloading, and/or maneuvering of trucks associated therewith takes place on public rights-of-way.

7.0 Performance Standards:

7.1

Each industrial use is required to continuously employ the best pollution control and nuisance abatement technology reasonably and practicably available for that particular industry; provided however where federal or state law provides for the level of technology to be employed, the federal or state standard shall apply.

7.2

Heat, Glare and Light: All operations and facilities producing heat, glare, or light, including exterior lighting, shall be directed or shielded by a wall or fence so that heat, glare, or light is not reflected so as to unreasonably infringe upon the use and enjoyment of adjacent property.

7.3

Vibration: No vibration other than that caused by highway vehicles and trains shall be permitted which is discernible without instruments at or beyond the property line for the use concerned.

7.4

Odors: No odors shall be emitted that are detectable at or beyond the property line for the use concerned in such concentration or of such duration as to cause a public nuisance or threaten health or safety or so as to unreasonably infringe upon the use and enjoyment of adjacent property.

EXHIBIT BBB

Certificate of Approval

The State of Washington has developed a program for the effective management of coastal zone resources and development of its coastal lands and waters which has been approved under the terms of the Coastal Zone Management Act of 1972 (P.L. 92-583, as amended).

Therefore it is with great honor that I award this Certificate of Approval for the

Washington State Coastal Zone Management Program

and commend the state for having the first such program in the Nation.

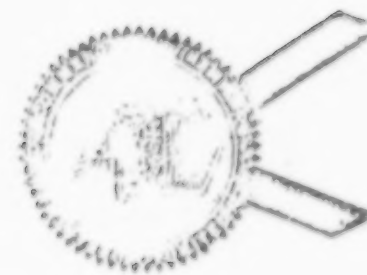
Witness

Harry Lane

Pat Knecht

Eric R. Carlson

Secretary of Commerce



UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF WASHINGTON
THREE-JUDGE COURT

STATE COASTAL ZONE MANAGEMENT PROGRAM

The Coastal Zone Management Act of 1972 (Public Law 92-583), as amended, hereinafter the CZMA, authorizes the Secretary of Commerce to make annual grants to any coastal state for costs of administering the state's management program, if he approves the program in accordance with subsection 306(c) of the CZMA.

The functions of the Secretary of Commerce under the CZMA have been delegated to the Administrator of the National Oceanic and Atmospheric Administration (NOAA) under Department of Commerce Organization Order 25-5A. The functions have in turn been redelegated to the Assistant Administrator of NOAA for Coastal Zone Management under Department of Commerce Organization Order 25-5B.

Section 306(c), (d) and (e) of the CZMA require that certain findings be made by the Secretary of Commerce prior to approval of a state management program. The Assistant Administrator for Coastal Zone Management, acting for the Secretary, hereby sets forth the findings on the Washington Coastal Zone Management Program (WCZMP). These findings should be understood as constituting only part of the other review, comment, participation and technical requirements of the CZMA that have been met by the WCZMP through its planning processes. Demonstration that these and other requirements of the CZMA have been met are contained in the state's program document, formal amendments to that document and the final environmental impact statement (FEIS) on the WCZMP prepared by the Office of Coastal Zone Management, dated April 9, 1976. These documents are referenced in the following findings, as appropriate.

FINDINGS PURSUANT TO SECTION 306(c) OF THE CZMA:

(1) The State of Washington has developed and adopted a management program for its coastal zone in accordance with rules and regulations promulgated by the Office of Coastal Zone Management on behalf of the Secretary, after notice, and with the opportunity of full participation by relevant Federal agencies, state agencies, local governments, regional organizations, port authorities, and other interested parties, public and private, which is adequate to carry out the purposes of the Coastal Zone Management Act and is consistent with the policy declared in section 303 of the Coastal Zone Management Act.

The opportunity for full participation by all interested parties is afforded by the state laws that make up the WCZMP, their implementing guidelines and regulations and the local planning processes that have been operating since 1972. The basic policy of Washington's Shoreline Management Act of 1971 (SMA) for public participation parallels the national legislation and reads, in relevant part: " * * * that all persons and entities having an interest in the guidelines and master programs developed under this chapter are provided with a full opportunity for involvement in both their development and implementation (and) the department and local governments shall * * * not only invite but actively encourage participation by all persons and private groups and entities * * *"

In response to the CZMA, the WCZMP administered by the Department of Ecology (DOE) in conjunction with other state agencies and participating local governments, was subjected to two extensive formal reviews by all relevant regional and headquarters Federal agencies from March 1975 through May 1975 and again, from December 1975 through February 1976. In addition, the WCZMP was distributed for local and national review under the terms of the National Environmental Policy Act in the form of a draft environmental impact statement in March 1975, and a final environmental impact statement in April 1976. Documentation of these processes is found in Chapter V and Appendix I of the program document and Chapter X and Appendix X of the FEIS.

All serious disagreements raised by Federal agencies have been satisfactorily addressed in the WCZMP, as amended. The first year work program after approval is also designed to respond to many constructive recommendations made by Federal agencies and other reviewers.

The work programs involved in the development of the WCZMP have been routinely subjected to local, areawide and state reviews under the provisions of Title IV of the Intergovernmental Cooperation Act of 1968 and Office of Management and Budget (OMB) Circular A-95.

The basic purpose of the Coastal Zone Management Act is to enhance the ability of the states and local governments, in cooperation with the Federal Government, to manage the land and water resources of the coastal zone. The broadest statement of Congressional purpose is the preamble to the Act: "To establish a national policy and develop a national program for the management, beneficial use, protection, and development of the land and water resources of the Nation's coastal zones * * *". Key supporting purposes include: (a) encouraging the states to exercise their full authority over the lands and waters in the coastal zone; and (b) developing programs that unify policies, criteria, standards, methods, and processes for dealing with land and water use decisions of more than local significance.

The WCZMP meets the test of comprehensiveness set forth in the CZMA's preamble. The basic authority for coastal management of the state, the SMA, declares in relevant part that there is " * * * a clear and urgent demand for a planned, rational and concerted effort, jointly performed by Federal, state and local governments, to prevent the inherent harm in an uncoordinated and piecemeal development of the state's shorelines * * *". This is to be accomplished by "planning for and fostering all reasonable and appropriate uses," to " * * * recognize and protect the statewide interest over local interest," to "preserve the natural character of the shoreline" and "result in long-term over short-term benefit." The State Environmental Policy Act (SEPA), Environmental Coordination Procedures Act (ECPA), and the twenty regulatory authorities residing within

DOE provide further evidence that a broad range of uses can be controlled and guided in conformance with the SMA mandate.

The "full authority" of the State of Washington to manage the beneficial use, protection and development of its coastal land and water resources in a coordinated fashion is described in Chapters III and V of the program document.

Techniques to unify policies, criteria, standards, methods and processes are an integral part of the WCZMP. SEPA and ECPA are broad mandates in the State of Washington for environmental policy disclosure, evaluation and unification. The SMA and its implementing guidelines and regulations set state standards for local master program development and adherence to its policies by all public and private parties. The state's Department of Ecology (DOE), the lead agency under the SMA, has clarified and described its internal processes to unify its administrative planning and regulatory functions. A system of interagency commissions and boards provide a means for DOE input to interagency decision-making and also for citizen overview of DOE's programs. Finally, the Natural Resources Cabinet, chaired by the Governor, acts as the highest executive body to deal with the unification of state policies, including those that are essential to the integrity of the WCZMP.

(2) The State of Washington has:

(a) coordinated its program with local, areawide, and interstate plans applicable to areas within the coastal zone existing on January 1 of the year in which the state's management program was submitted to the Office of Coastal Zone Management, which plans have been developed by a local government, an areawide agency designated pursuant to regulations established under section 204 of the Demonstration Cities and Metropolitan Development Act of 1966, and regional agency, or an interstate agency.

Coordination between the WCZMP and other relevant plans is assured by the same processes as outlined in (1) above. The most specific assurance of coordination with local and areawide plans is contained in the SMA and its implementing guidelines which call for local master programs to consider "all plans, studies,

surveys, inventories and systems of classification made or being made by Federal, state, regional or local agencies." Further, all such WCZMP plans are subject to clearinghouse review under OMB Circular A-95. The WCZMP has been coordinated with other relevant plans existing in the state at the time it was submitted for approval. Examples of how the WCZMP has coordinated with all applicable plans are documented in Appendix IX of the FEIS.

(b) established an effective mechanism for continuing consultation and coordination between the management agency designated pursuant to paragraph (5) of subsection 306(c) of the CZMA and with local governments, interstate agencies, regional agencies, and areawide agencies within the coastal zone to assure the full participation of such local governments and agencies in carrying out the purposes of the CZMA.

The WCZMP makes specific provision for continuing consultation with the above agencies and also with affected Federal agencies in Chapter VI of the program document. During program administration the WCZMP has committed itself to full consultation and coordination with Federal agencies and has adopted specific operational guidelines for this interaction as part of its formal amendments. The SMA and DOE guidelines set forth the basis for consultation during local master program review, changes and refinements to such programs, and multijurisdictional coordination. Program coordination objectives that form the basis of the state's first year administrative grant and work program contain specific proposals for strengthening and maintaining interagency and intergovernmental participation in the future.

(3) The State of Washington has held public hearings in the development of the management program.

As indicated above, the WCZMP was established through the SMA, beginning in 1971. Hearings were held for the SMA itself, as well as for all the regulations and local master programs as required by the Administrative Procedures Act of Washington (RCW Chapter 34.04). Additionally, a joint NOAA/DOE hearing on the entire proposed program was held on April 22, 1975, following press notification and individual invitations. The

following table shows the hearing dates for the chapters of the Washington Administrative Code implementing the SMA:

— Chapter 173-14 Permits for Substantial Development on Shorelines of the State:

December 1971, in Olympia

— Chapter 173-16 Shoreline Management Act Guidelines for Development of Master Program:

March 21, 1972, in Spokane

March 23, 1972, in Olympia

June 20, 1972, in Olympia

— Chapter 173-19 State Master Program:

October 15, 1974, in Spokane

October 23, 1974, in Olympia

— Chapter 173-18 Shoreline Management Act — Streams and Rivers Constituting Shorelines of the State;

— Chapter 173-20 Shoreline Management Act — Lakes Constituting Shorelines of the State; and

— Chapter 173-22 Adoption of Designations of Wetlands Associated with Shorelines of the State (all heard together):

June 28, 1972, in Olympia

(4) The State of Washington management program and any changes thereto have been reviewed and approved by the Governor.

On December 12, 1975, Governor Daniel J. Evans, approved the WCZMP and certified that it met the requirements of the CZMA. On March 29, 1976, in response to comments from Federal agencies and others on matters requiring clarification and modification in the December 12 program document, Governor Evans approved and transmitted to OCZM several amendments and modifications to the WCZMP.

(5) The Governor of Washington has designated a single agency to receive and administer the grants for implementing

the management program required under paragraph 306(c)(1) of the CZMA.

In his letter of December 12, 1975, approving the WCZMP, Governor Daniel J. Evans certified that:

"The Department of Ecology is the single designated agency to receive and administer grants for implementing the coastal zone management program, and further, the Department of Ecology is hereby designated as the lead agency for the implementation of the coastal zone management program."

(6) The State of Washington is organized to implement the management program required under paragraph 306(c)(1) of the CZMA.

The state is organized to implement the management program through several state, local and areawide agencies, with DOE assigned the central point of administrative responsibility. The DOE, which aggregates under one department the majority of the most important environmental regulations of the state, is also the lead agency for implementation of the program.

A Shoreline Hearings Board has been established by the SMA as the final administrative arbiter relative to decisions made under this primary coastal zone control mechanism.

Several other state agencies and boards have major management responsibilities in the coastal zone and are an integral part of the state's coastal management structure. Chapter III of the WCZMP document demonstrates that the roles, responsibilities and organizational arrangements for administration of the program are adequate. The first year administrative grant application commits adequate staff resources in DOE, local governments, and in other state and regional agencies to insure that the managerial structure of the program will function in the manner described in the WCZMP.

Counties and municipalities in Washington's coastal zone are organized to administer the management program through the preparation and administration of local master programs and local

police power regulations and controls, in accordance with the SMA policies and DOE guidelines.

The SMA provides the principal organizational linkage between the DOE, as lead agency, and other state, regional and local government agencies. Section 90.58.280 of the SMA provides that:

"The provisions of this Chapter (1971 ex. c286 Sec. 28) shall be applicable to all agencies of state government, counties, and public and municipal corporations and to all shorelines of the state owned or administered by them."

The SMA also provides that the lands within the jurisdiction of such agencies and "adjacent to the shorelines of the state" are to be managed consistently with the policies of the Act, the guidelines, and the master programs for the shorelines of the state. Therefore, the organizational management structure is pervasive in the coastal zone.

The Governor certified on December 12, 1975 that:

"The state has established, and is operating the necessary organizational structure to implement the coastal zone management program."

(7) The State of Washington has the authorities necessary to implement the program, including the authority required under subsection 306(d) of the CZMA.

Washington's SMA and other existing authorities of the state, such as the State Environmental Policy Act and Environmental Coordination Procedures Act, provide it with the authorities necessary to implement the program. The description of authorities is set forth subsequently under the findings pursuant to Section 306(d) for clarity of presentation.

(8) The State of Washington management program provides for adequate consideration of the national interest involved in the siting of facilities necessary to meet requirements which are other than local in nature.

The WCZMP and its related state structure of policies and authorities establish a reasoned means to consider the national

interest in the siting of facilities of local as well as national importance. The state program neither arbitrarily excludes nor unreasonably restricts the siting of such facilities. Rather, the management program addresses the national interest in a positive manner. This is accomplished primarily through the open planning processes establishing the shoreline program, the appeals process available through the Shorelines Hearing Board and the checks, balances, and procedures associated with the Forest Practices Act, the Thermal Power Plant Site Evaluation Council, water and air quality standards, and related programs.

The DOE guidelines give priority to ports and water related industrial uses, and require that local master programs consider the regional and statewide needs for such uses.

Extensive input of national concerns and interests was assured by the Federal agency participation, consideration of their views and review processes mandated by the CZMA and set forth in the program document, as amended. The range of interests expressed by various Federal agencies has ranged from foreseeable needs to meet national security emergencies, through siting of energy facilities in undeveloped areas, to stringent requirements to enhance living marine resources and protect natural habitats. Partly in response to these interests, the state has established a process for identification of areas which are of particular concern to both the state and to the Nation, and has acknowledged that it is the primary objective of coastal zone management to deal openly with needs and conflicts — including those stemming from national perspectives — in the implementation of its program.

(9) The State of Washington management program makes provision for procedures whereby specific areas may be designated for the purpose of preserving or restoring them for their conservation, recreational, ecological or esthetic values.

The SMA and its implementary guidelines provide the basis for designating "natural" and "conservancy" shoreline environments the purposes of which are to protect and carefully manage natural features, the ecology of the shoreline, scenic vistas,

esthetics, fisheries and wildlife. Other mandatory elements of local programs include specific provisions for dealing with archaeological areas and historic sites and recreational uses of the shorelines. These procedures for designating specific areas are guided by state policy and DOE guidelines to minimize manmade intrusions on shorelines, to restore developed areas, to promote esthetic values, to protect water systems, to provide access to public beaches and to accommodate other recreational facilities, wherever possible.

The state procedure for identifying areas of particular concern, set forth in Chapter I of the program document, also provides a process within which specific areas of environmental or development significance can be identified. Ten areas of particular concern have been identified for priority management attention in the WCZMP.

The state is actively seeking support for acquisition of an estuarine sanctuary for ecological research and protection purposes as provided for in Section 312 of the CZMA.

Other programs and authorities of the state serve to further the purposes of this finding, especially the natural areas acquisition and maintenance program of the Department of Natural Resources, the state's historic preservation program and the acquisition program of the Parks and Recreation Commission.

FINDINGS PURSUANT TO SECTION 306(d) OF THE CZMA:

The State of Washington, acting through its chosen agency or agencies, including local governments, areawide agencies designated under section 204 of the Demonstration Cities and Metropolitan Development Act of 1966, regional agencies, or interstate agencies, has authority for the management of the coastal zone in accordance with the management program.

(1) Such authority includes power to administer land and water use regulations, control development in order to ensure

compliance with the management program, and to resolve conflicts among competing uses.

The SMA requires and defines a planning program and a regulatory permit system, both of which are developed at the local level under state policy, guidance, review and approval. The planning program for each local government consists of a comprehensive shoreline inventory and a master program for the regulation of shoreline uses. Under the SMA, the local planning process is conducted in conformance with state guidelines prepared and adopted by DOE that are in force during the planning process. These guidelines and regulations serve as the basis for state review and approval of local master programs and form a key element for the implementation of the WCZMP. The regulatory system is overseen by DOE as set forth in the SMA. The SMA sets forth policy direction and specific priorities, and DOE and local governments are directed to give preference to uses in a prescribed order of priority.

Land and water use regulations and compliance with the management program apply within two designated tiers of the state's coastal zone. The first tier, or "resource boundary," encompasses the marine shorelines of the state and associated wetlands, including at a minimum all upland area 200 feet landward from the ordinary high water mark, and the upstream shorelines to the limit of saltwater intrusion under direct SMA control. The second tier or "planning and administrative boundary" includes relevant additional areas in the state's coastal counties the uses of which may directly and significantly affect the lands and waters within the "resource boundary."

Uplands adjacent to the jurisdiction of the SMA are to be managed on a basis that is consistent with the policies of SMA. The SMA directs that the provisions thereof shall be applicable to all agencies of state government, counties, and public and municipal corporations and to all shorelines of the state owned or administered by them. It also directs all state agencies, counties, and public and municipal corporations to review administrative and management policies, regulations, plans and ordinances relative to lands under their respective jurisdiction adjacent to the

shorelines of the state so as to achieve a use policy on said lands consistent with the policy of the SMA.

The SMA also authorized DOE to develop recommendations for land use control for such lands, and directs local governments, in developing use regulations for such areas, to take into consideration any recommendations developed by DOE, as well as any other state agencies or units of local government.

Outside of the "resource boundary" and its adjacent uplands, the WCZMP has developed coordination arrangements among local and state agencies and their authorities to assure the integrity of the management program.

(2) The State of Washington's authority also includes power to acquire fee simple and less than fee simple interests in lands, waters, and other property through condemnation or other means when necessary to achieve conformance with the management program.

DOE is empowered by the SMA to acquire lands and easements when necessary to achieve implementation of local master programs. Also, the Departments of Ecology, Natural Resources, and Game, and the Parks and Recreation Commission have additional authorities to acquire land. Taken together, these authorities are sufficient to achieve conformance with the WCZMP.

FINDINGS PURSUANT TO SECTION 306(e) OF THE CZMA:

(1) The State of Washington provides for a combination of the following general techniques for control of land and water uses within the coastal zone:

(a) State establishment of criteria and standards for local implementation, subject to administrative review and enforcement of compliance;

(b) Direct state land and water use planning and regulation; and

(c) State administrative review for consistency with the management program for all development plans, projects, or land and water use regulations, including exceptions and variances thereto, proposed by any state or local authority or private developer, with power to approve or disapprove after public notice and an opportunity for hearings.

The primary technique for land and water use control in the WCZMP involves that set forth in (a) above, with the focal point being in DOE on behalf of the state as provided in the SMA. The SMA enunciates state policies for the shorelines of the state and gives preference to and sets priorities for uses of shorelines. In accordance with these policies, DOE has promulgated guidelines for local implementation through local master programs and established criteria and standards for use activities. These policies and guidelines apply to land and water uses and resources affecting state waters and shorelines within the resource boundary, as well as those shorelines within the planning and administrative boundary.

DOE reviews and approves local master programs for conformance to their policies and guidelines. Both DOE and the Attorney General review plans and permits for development in and adjacent to the shoreline areas and can ensure conformity through appeal to the Shoreline Hearing Board or the courts. The SMA requires administrative review by DOE of all variances from adopted local master programs, with power to approve or disapprove each variance residing in the DOE.

As the lead coastal zone management agency of the state, DOE will exercise its full range of regulatory authorities other than the SMA to ensure conformance with the WCZMP. DOE will also exercise its review and coordination responsibilities under the State Environmental Policy Act for the same purposes. The interagency authorities and arrangements cited in Chapter III and elsewhere in the program document will be applied in a coordinated fashion to achieve the broader objectives of the WCZMP.

(2) The State of Washington program also provides for a method of assuring that local land and water use regulations

within the coastal zone do not unreasonably restrict or exclude land and water uses of regional benefit.

The following provides evidence that the state has met the above requirement: The SMA declares use priorities for shorelines of state significance to which the local governments "shall give preference" and "recognize and protect the statewide interest over local interest."

The state program neither arbitrarily excludes nor unreasonably restricts uses of regional benefit. The methods for assuring this are through the open planning process establishing the shoreline program, the appeals process available through the Shorelines Hearing Board, recognition of the statewide over local interests with respect to shorelines of statewide significance, and the checks, balances and procedures associated with the Forest Practices Act, Thermal Power Plant Site Evaluation Council, water and air quality standards, and other authorities cited in the program document.

A review of the aggregated local master programs submitted to DOE concludes that there appear to be no unreasonable restrictions or exclusions in these programs. Where uses are restricted or controlled, these restrictions are based upon defined and prudent criteria.

Having made the findings set forth above, and having determined that the Washington State Coastal Zone Management Program meets the requirements of the Coastal Zone Management Act of 1972 (Public Law 92-583), as amended, and its implementing regulations, the program is hereby approved on behalf of the Secretary of Commerce.

Dated: June 1, 1976

/s/

Robert W. Knecht
Assistant Administrator for
Coastal Zone Management,
NOAA

 AFFIDAVIT

CITY OF WASHINGTON)
) ss:
 DISTRICT OF COLUMBIA)

ROBERT W. KNECHT, being first duly sworn, deposes and says:

1. That he is the Assistant Administrator of the National Oceanic and Atmospheric Administration (NOAA) for Coastal Zone Management.

2. That, acting in that capacity, he approved the Washington State Coastal Zone Management Program, pursuant to section 306 of the Coastal Zone Management Act of 1972 (Public Law 92-583, 16 U.S.C. 1451) on June 1, 1976.

3. That the Coastal Zone Management Act of 1972, hereinafter the CZMA, authorizes the Secretary of Commerce to make annual grants to any coastal State for the costs of administering the State's coastal zone management program, if he approves the program in accordance with subsection 306(c) of the CZMA.

4. That the functions of the Secretary of Commerce under the CZMA have been delegated to the Administrator of NOAA under U.S. Department of Commerce Organization Order 25-5A. The functions have been in turn redelegated to the Assistant Administrator of NOAA for Coastal Zone Management under U.S. Department of Commerce Organization Order 25-5B.

5. That when he approved the Washington State Coastal Zone Management Program on June 1, 1976, he did not approve Chapter 125 of the 1975 laws of the State of Washington, enacted as Substitute House Bill No. 527 (the "Tanker Law"), as being a part or component of the Washington Coastal Zone Management program.

FURTHER AFFIANT SAYTH NOT.

_____/s/
 ROBERT W. KNECHT
*Assistant Administrator
 National Oceanic and
 Atmospheric Administration*

Subscribed and sworn to before
 me this 17th day of June, 1976

BETTY C. BARAN

*Notary Public in and for
 the District of Columbia*

My Commission expires August 14, 1977.

COAST GUARD MEMORANDUM

UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF WASHINGTON
THREE-JUDGE COURT

UNITED STATES GOVERNMENT MEMORANDUM

DEPARTMENT OF TRANSPORTATION
UNITED STATES COAST GUARD

G-LMI/81
5860

U.S. COAST GUARD

JUL 14, 1975

WASHINGTON, D.C.

MERCHANT VESSEL PERSONNEL

July 10, 1975

SUBJECT: State of Washington Bill No. 527, enacted 29 May
1975

FROM: Chief Counsel

TO: Chief, Office of Merchant Marine Safety

1. In an effort to reduce the danger of oil spills in certain congested areas the State of Washington has legislated a law requiring "all" oil tankers—i.e., those U.S. tankers registered in the foreign trade, all foreign tankers, and all U.S. tankers enrolled in the coastwise trade, of 50,000 DWT or greater—to employ a Washington State licensed pilot while navigating in Puget Sound and adjacent waters. Subject Act also prohibits oil tankers greater than 125,000 DWT from operating in certain areas, and prohibits oil tankers of 40,000 to 125,000 DWT from operating in certain areas unless they either satisfy enumerated standard safety features or are under the escort of tugs meeting specified

requirements. The Act directs studies related to vessels carrying other potentially hazardous materials.

2. I believe that the subject matter of the Act is preempted by federal law, and imposes an unreasonable restriction upon interstate commerce in contravention of the Commerce Clause, Act. I, Clause 3 of Section 8. It is also in conflict with federal statutory authorities which provide for the development of international maritime standards within the framework of IMCO, thereby seriously interfering with the Executive authority in Foreign Affairs.

3. While Congress has left to the States the regulation of pilotage in the bays, inlets, rivers, harbors and ports of the several states " * * * until further provision is made by Congress * * * " (46 U.S.C. 211), it has also required that "every coastwise seagoing steam vessel subject to the navigation laws of the United States * * * (i.e., all coastwise vessels subject to the inspection by the Coast Guard) not sailing under register, shall, when underway, except on the high seas, be under the control and direction of pilots licensed by the Coast Guard." (46 U.S.C. 364). Although " * * * title 52 of the Revised Statutes shall [not] be construed to annul or affect * * * the laws of any State, requiring vessels entering or leaving a port in any such State * * * to take a pilot duly licensed or authorized by the laws of such State * * * " (16 U.S.C. 215), the limitation does not apply to coastwise steam vessels. (Id.) These statutes have been consistently construed to mean that a State cannot require pilotage on an American inspected vessel on a coastwise voyage unless it is sailing under register. This has recently received support in the enactment of the Ports and Waterways Safety Act, P.L. 92-340, July 10, 1972 wherein Congress again recognized the right of a State to require pilots on self-propelled vessels engaged in the *foreign trades* while leaving pilotage requirements for coastwise vessels under federal jurisdiction. See Section 101(5). (Emphasis added.)

4. The Supreme Court has interpreted the Supremacy Clause (Article VI) of the U.S. Constitution as providing the necessary vehicle for federal pre-emption of state laws in which there is

conflict. The federal government has long been tasked with the responsibility to regulate maritime safety. With the passage of the Ports and Waterways Safety Act of 1972, P.L. 92-340, in July 1972 the federal government, through the Coast Guard, has broadened maritime safety authority to affirmatively include environmental considerations in addition to safety aspects. The purpose of the PWSA is to promote the safety and environmental quality of our ports, waterfront areas and the navigable waters of the U.S. — exactly what the Washington Act proposes to do. Specifically, §201 of the PWSA tasks the Coast Guard with the responsibility of establishing design and construction criteria for vessels, including oil tankers. The State of Washington's attempt to impose standard safety features on certain oil tankers (Sec. 3(2)(a)-(e)) is violative of the preemption doctrine. *Kelly v. State of Washington*, 302 U.S. 1 (1937) recognized that state structure and equipment requirements on vessels would be preempted by the necessity for uniform federal regulation. Further the prohibition of oil tankers greater than 125,000 DWT from entering Puget Sound, and the tug escort requirements, are also violative of the preemption doctrine. House Report No. 92-563 accompanying H.R. 8140 at page 8 recognized the need for uniform federal regulation in maintaining vessel traffic services and systems for ports, harbors, and other waters subject to congested traffic. *Burbank v. Lockheed Air Terminal*, S ERC 1321 (U.S. 1973) supports this preemption conclusion. The Court recognized that, even though intended to protect the local area from noise pollution, federal control over air commerce preempted the City of Burbank's ordinance prohibiting jet airplanes from landing at the Hollywood-Burbank Airport between 11 P.M. and 7 A.M. the next day. Likewise, comprehensive federal control over maritime commerce preempts Washington's legislation.

5. The Washington Act is also unconstitutional because it creates an undue burden on interstate commerce (ISC). The standard safety feature requirements unduly burden ISC. Compare with *Southern Pacific Co. v. Arizona*, 325 U.S. 761 (1945) (state law limiting the length of railroad cars created an undue burden on ISC); and *Bibb v. Navajo Freight Lines, Inc.*, 359 U.S. 520 (1959) (state law requiring mud flaps on all trucks operating in the state created an undue burden on ISC).

Distinguish *Huron Portland Cement Co. v. Detroit*, 362 U.S. 440 (1959) which upheld Detroit's smoke abatement ordinance because it did not create an undue burden on ISC (and was not preempted by Federal regulation). However, note that the ordinance did not impose structural requirements for vessel's boilers. Nor is *Askew v. American Waterways Operators*, 411 U.S. 1325 (1973) dispositive. The Court avoided deciding whether the provision of the Florida Act requiring containment gear impermissibly invaded a subject requiring uniform federal regulation. Concerning the prohibition from entry and tug escort requirements, though preemption is the most persuasive argument for invalidating these provisions, I believe they also would create an undue burden on ISC — they would impede the free movement of both interstate and foreign waterborne commerce.

6. Another major area of concern with the Act is the effect it will have on the efforts of the U.S. to achieve internationally acceptable marine safety and environmental protection standards. The elaboration of Solas 74 and the 1973 Marine Pollution Convention are recent examples of the actions taken to provide a system of equality which will not unduly burden commerce. Congress has, recognized the impracticality of local unilateral action creating systems of inequalities by mandating, in Section 201(7) of PWSA, 46 USC 391a(7), a requirement of equality consonant with international treaties, conventions, or agreements for the protection of the marine environment.

7. In view of the broad statutory and regulatory power of the Federal Government, acting through the Coast Guard, in all fields related to maritime and environmental safety, there can be no doubt that the field encompassed by the Act of the State of Washington is federally preempted. The Act is also constitutionally void because it would create an undue burden on interstate commerce.

/s/

R. A. RATTI

Copy to:
G-W

AFFIDAVIT OF BYRON E. MILNER
IN SUPPORT OF PLAINTIFF
ATLANTIC RICHFIELD COMPANY'S
MOTION FOR PERMANENT INJUNCTION IN
SUPPORT OF DECLARATORY JUDGMENT

(Caption, and names, addresses, and telephone numbers of attorneys omitted in printing.)

UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF WASHINGTON
AT SEATTLE

No. C 75-648
(Three Judge Court)

STATE OF CALIFORNIA)
) ss.
COUNTY OF LOS ANGELES)

I, BYRON E. MILNER, having been duly sworn, do depose and say that:

1. I am employed by Atlantic Richfield Company as Vice President of Supply and Coordination. In this capacity I am responsible for the supply of crude oil to the Atlantic Richfield Cherry Point Refinery in the State of Washington, which includes the scheduling of tankers for this purpose.

2. During the next 10 weeks, 11 tankers have been scheduled to arrive at Cherry Point with crude oil on or about the dates set forth in Exhibit A attached hereto. As indicated in Exhibit A, all such tankers are larger than 40,000 deadweight tons (DWT) and therefore subject to § 3(2) of the Washington Tanker Law.

3. In 1973 there were 4 (four) tankers larger than 125,000 DWT which unloaded at the Cherry Point Refinery dock; in 1974 there were 3 (three); and in 1975, from January to September, 5 (five).

4. During the period from September 8, 1975, when the Tanker Law became effective, to September 24, 1976, Atlantic Richfield, in compliance with § 3(1) of the Tanker Law, scheduled no tankers larger than 125,000 DWT to arrive at the Cherry Point dock.

5. Atlantic Richfield plans to resume the scheduling practices in effect prior to the enactment of the Tanker Law; hence, I expect that, if permitted to do so, approximately five to eight tankers larger than 125,000 DWT will arrive at the Cherry Point Refinery dock in the next twelve months. As indicated in Exhibit A, the first such tanker is presently scheduled to arrive on November 25, 1976.

6. I have read the foregoing affidavit and declare it to be true and correct to the best of my knowledge, information and belief.

/s/

BYRON E. MILNER

Sworn to and subscribed before me this 28th day of September, 1976.

/s/ Isabel T. Urquiza

Notary Public in and for the
State of California

EXHIBIT "A"

The following tankers have been scheduled to arrive at the Cherry Point Refinery dock on or about the dates set forth:

<u>Date of Arrival</u>	<u>Name</u>	<u>DWT (000)</u>
9/30/76	Jaglella	120
10/1/76	Takatorisan	120
10/7/76	Ronacastle	125
10/15/76	Eul Delmar	116
10/19/76	White Peony	86
11/5/76	Archon	122
11/6/76	Santa Augusta	84

11/7/76	Polyxene "C"	122
11/25/76	(to be chartered)	Between
		125 and 150
12/7/76	Sea Queen	122
12/9/76	(to be chartered)	Less than
		125

AFFIDAVIT OF HERBERT H. ZACHOW
IN SUPPORT OF
PLAINTIFF ATLANTIC RICHFIELD COMPANY'S
MOTION FOR PERMANENT INJUNCTION
IN SUPPORT OF DECLARATORY JUDGMENT

(Caption, and names, addresses, and telephone numbers of attorneys omitted in printing.)

UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF WASHINGTON
AT SEATTLE

No. C 75-648
(Three Judge Court)

STATE OF CALIFORNIA)
)ss.
COUNTY OF LOS ANGELES)

I, HERBERT H. ZACHOW, having been duly sworn, do depose and say that:

1. I am employed by Atlantic Richfield Company as Manager of Crude and Product Supply. In this capacity I am responsible for the supply of crude oil to the Atlantic Richfield Cherry Point Refinery in the State of Washington, which includes the scheduling of tankers for this purpose.

2. This affidavit is designed to supplement the September 28, 1976 affidavit of Byron E. Milner by updating the information contained therein.

3. During the next seven (7) weeks, six (6) tankers have been scheduled to arrive at Cherry Point with crude oil, on or about the dates set forth in Exhibit A attached hereto. As indicated in Exhibit A, all such tankers are larger than 40,000 deadweight tons (DWT) and therefore subject to §3 of the Washington Tanker Law. As further indicated in Exhibit A, the first such tanker larger than 125,000 DWT is presently scheduled to arrive on December 7, 1976.

4. During the period from September 24, 1976, to the present, Atlantic Richfield Company, in compliance with §3(2) of the Washington Tanker Law, has received five (5) tankers at its Cherry Point refinery as set forth in Exhibit B attached hereto.

5. I have read the foregoing affidavit and declare it to be true and correct to the best of my knowledge, information and belief.

/s/

HERBERT H. ZACHOW

Sworn to and subscribed before me this 11th day of November, 1976.

/s/ Gerry Jones

Notary Public in and for the State of California

EXHIBIT A

<u>Arrival Date</u>	<u>Vessel</u>	<u>DWT (000)</u>
11-23-76	Archon	122
11-27-76	Santa Augusta	84
12-7-76	Overseas Argonaut	139
12-15-76	Fairbanks	120
12-17-76	Sea Tiger	120
12-28-76	Independence	150

EXHIBIT B

<u>Arrival Date</u>	<u>Vessel</u>	<u>DWT (000)</u>
9-29-76	Jaglella	120
10-4-76	Takatorisan Maru	120
10-16-76	Ronacastle	125
10-21-76	White Peony	86
10-26-76	Eulalia Delmar	116

ORDER SUSPENDING PROCESSING OF APPEALS TO THE UNITED STATES COURT OF APPEALS FOR THE NINTH CIRCUIT

(Caption, and names, addresses, and telephone numbers of attorneys omitted in printing.)

UNITED STATES DISTRICT COURT
WESTERN DISTRICT OF WASHINGTON
AT SEATTLE

Civil No. C-75-648-M
(Three Judge Court)

Good cause appearing therefor by the motion of the State of Washington defendants, Daniel J. Evans, et al.,

IT IS HEREBY ORDERED that all further processing of the appeals to the United States Court of Appeals for the Ninth Circuit, initiated by two documents entitled "Notice of Appeal" filed with this Court by defendants and intervening defendants on October 21, 1976, and the other entitled "Notice of Appeal to the United States Court of Appeals for the Ninth Circuit" filed with this Court on November 23, 1976, and related to the Judgment and Orders dated and entered by this Court on September 23 and 24, 1976, and November 12, 1976, is suspended pending completion of an appeal to the United States Supreme Court initiated by defendants through the filing of a "Notice of Appeal to the Supreme Court of the United States" with this Court on November 19, 1976.

DATED this 1st day of December, 1976.

/s/ Walter T. McGovern

UNITED STATES DISTRICT JUDGE

OPINION AND ORDER ON
APPLICATION OF STAY

SUPREME COURT OF THE UNITED STATES

No. A-456

DANIEL J. EVANS, GOVERNOR OF
WASHINGTON, ET AL.,

Applicant, On Application
of Stay

VS.

ATLANTIC RICHFIELD COMPANY ET AL.

[December 9, 1976]

MR. JUSTICE REHNQUIST, Circuit Justice.

Applicants, officials of the State of Washington, seek a stay of the order of the United States District Court for the Western District of Washington, entered November 12, 1976, enjoining enforcement of Chapter 125 of the Laws of the State of Washington, 1975, First Extraordinary Session, Rev. Code Wash. § 88.16.170 *et seq.* This statute, designed "to decrease the likelihood of oil spills on Puget Sound and its shorelines," imposes regulations on oil tankers over 40,000 deadweight tons ("DWT")* and prohibits "supertankers" of over 125,000 DWT. On the date the statute became effective, September 8, 1975, respondents filed suit in the United States District Court for the Western District of Washington, claiming that Chapter 125 had been preempted by federal law, particularly the Ports and Waterways Safety Act of 1972 ("PWSA"), 33 U. S. C. § 1221 *et seq.*, 46 U. S. C. § 391a, and that Chapter 125 imposed an undue burden on interstate commerce, in violation of the Commerce Clause of the United States Constitution, Art. I, § 8, cl. 3. A three-judge court was convened pursuant to 28 U. S. C. §§ 2281 and 2284, the case was heard pursuant to an agreed statement of facts, and an opinion was issued on September 23, 1976, holding Chapter 125

*Tankers between 40,000 and 125,000 DWT may enter Puget Sound (a) if they contain certain enumerated safety features or (b) if they are accompanied by a tug escort. Tankers over 50,000 DWT are required to have State licensed pilots on board when navigating Puget Sound.

pre-empted in its entirety: the State pilotage requirement by conflict with 46 U. S. C. §§ 215 and 364, and the remainder of Chapter 125 by the PWSA. On motion by respondents a permanent injunction was issued on November 12, 1976, but that order was stayed until December 15, 1976.

On consideration of the application and response, it appears that the issues involved are of sufficient complexity, and their resolution sufficiently uncertain, to warrant consideration by the full court. Such consideration ordinarily occurs at a regularly scheduled conference of the Court, to which the matter is referred by the Circuit Justice. The Court has a conference scheduled for Friday, December 10, but I have elected not to refer this application to that conference. Consideration by the full Court presupposes adequate time for each Justice to study the application and response prior to conference, and at this point such time simply is not available.

Since I do not believe that this case is of such extraordinary urgency as to warrant my requesting THE CHIEF JUSTICE to schedule a special conference to consider it, I have elected to refer the application to the next regularly scheduled conference of the Court. Because that conference will occur after December 15, the date on which the stay issued by the District Court expires, I think it is incumbent on me to exercise my authority as Circuit Justice to determine how the matter shall remain until it can be considered by the full Court. The state officials' showing of irreparable injury in the absence of a temporary stay, while not entirely unpersuasive, is not by any means overwhelming. Respondents' estimates of financial loss if the District Court stay is continued are at least equally marginal. Respondents have operated in compliance with the state statute for more than a year, and at no time during the pendency of their suit in the District Court did they seek preliminary relief. On balance I have decided that respondents should be required to continue to operate in this manner pending consideration of the application by the Court.

It is therefore ordered that the stay of the order of permanent injunction dated November 12, 1976, which would by its terms expire December 15, 1976, be continued until further order of this Court. The application for stay will be referred to the full Court at the conference following December 10.

No. A-456

DANIEL J. EVANS, GOVERNOR OF THE
STATE OF WASHINGTON, ET AL.,

Appellants,

v

ATLANTIC RICHFIELD COMPANY, ET AL.

ORDER

UPON CONSIDERATION of the application of counsel for the appellants and the response filed thereto,

IT IS ORDERED that the stay of the order of the permanent injunction entered by the United States District Court for the Western District of Washington on November 12, 1976 in case No. C75-648 M, which would by its terms expire December 15, 1976, be continued until further order of this Court.

DATED this 9th day of December, 1976.

/s/ William H. Rehnquist
*Associate Justice of the
Supreme Court of the
United States*

MEMORANDUM DECISION

UNITED STATES SUPREME COURT

DANIEL J. EVANS, Governor of Washington
et. al., appellants, v. ATLANTIC RICHFIELD
COMPANY and SEATRAN LINES,
INCORPORATED. No. 76-930.

Jan. 10, 1977. Application for stay of order of the permanent injunction entered by the United States District for the Western District of Washington granted, pending final disposition of the appeal by this Court.

UNITED STATES - WEST COAST
WASHINGTON

Mercuria Propriety
Scale 1:200,000 at Lat. 48° 12'
North American 1927 Datum

SOUNDINGS IN FATHOMS
 AT MEAN LOWER LOW WATER IN U.S. TERRITORY
 AT LOWEST NORMAL TIDES IN CANADIAN TERRITORY

OF CASE FOR MARRIAGE

Specialized FM stations with a range of 400+ watts. All times are in continuous operation 24 hours daily producing weather warnings, forecasts and reports from the NWS/OA, WEA/WP/SR/CV/CZ office as follows:

W A N

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ne National Ocean...
Mapping Agency H...
adopting a new nat...



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Topographic map of the study area showing contour lines and elevation markers. The map includes labels for elevations such as 1000, 1025, 1050, 1075, 1100, 1125, 1150, 1175, 1200, 1225, 1250, 1275, 1300, 1325, 1350, 1375, 1400, 1425, 1450, 1475, 1500, 1525, 1550, 1575, 1600, 1625, 1650, 1675, 1700, 1725, 1750, 1775, 1800, 1825, 1850, 1875, 1900, 1925, 1950, 1975, 2000, 2025, 2050, 2075, 2100, 2125, 2150, 2175, 2200, 2225, 2250, 2275, 2300, 2325, 2350, 2375, 2400, 2425, 2450, 2475, 2500, 2525, 2550, 2575, 2600, 2625, 2650, 2675, 2700, 2725, 2750, 2775, 2800, 2825, 2850, 2875, 2900, 2925, 2950, 2975, 3000, 3025, 3050, 3075, 3100, 3125, 3150, 3175, 3200, 3225, 3250, 3275, 3300, 3325, 3350, 3375, 3400, 3425, 3450, 3475, 3500, 3525, 3550, 3575, 3600, 3625, 3650, 3675, 3700, 3725, 3750, 3775, 3800, 3825, 3850, 3875, 3900, 3925, 3950, 3975, 4000, 4025, 4050, 4075, 4100, 4125, 4150, 4175, 4200, 4225, 4250, 4275, 4300, 4325, 4350, 4375, 4400, 4425, 4450, 4475, 4500, 4525, 4550, 4575, 4600, 4625, 4650, 4675, 4700, 4725, 4750, 4775, 4800, 4825, 4850, 4875, 4900, 4925, 4950, 4975, 5000, 5025, 5050, 5075, 5100, 5125, 5150, 5175, 5200, 5225, 5250, 5275, 5300, 5325, 5350, 5375, 5400, 5425, 5450, 5475, 5500, 5525, 5550, 5575, 5600, 5625, 5650, 5675, 5700, 5725, 5750, 5775, 5800, 5825, 5850, 5875, 5900, 5925, 5950, 5975, 6000, 6025, 6050, 6075, 6100, 6125, 6150, 6175, 6200, 6225, 6250, 6275, 6300, 6325, 6350, 6375, 6400, 6425, 6450, 6475, 6500, 6525, 6550, 6575, 6600, 6625, 6650, 6675, 6700, 6725, 6750, 6775, 6800, 6825, 6850, 6875, 6900, 6925, 6950, 6975, 7000, 7025, 7050, 7075, 7100, 7125, 7150, 7175, 7200, 7225, 7250, 7275, 7300, 7325, 7350, 7375, 7400, 7425, 7450, 7475, 7500, 7525, 7550, 7575, 7600, 7625, 7650, 7675, 7700, 7725, 7750, 7775, 7800, 7825, 7850, 7875, 7900, 7925, 7950, 7975, 8000, 8025, 8050, 8075, 8100, 8125, 8150, 8175, 8200, 8225, 8250, 8275, 8300, 8325, 8350, 8375, 8400, 8425, 8450, 8475, 8500, 8525, 8550, 8575, 8600, 8625, 8650, 8675, 8700, 8725, 8750, 8775, 8800, 8825, 8850, 8875, 8900, 8925, 8950, 8975, 9000, 9025, 9050, 9075, 9100, 9125, 9150, 9175, 9200, 9225, 9250, 9275, 9300, 9325, 9350, 9375, 9400, 9425, 9450, 9475, 9500, 9525, 9550, 9575, 9600, 9625, 9650, 9675, 9700, 9725, 9750, 9775, 9800, 9825, 9850, 9875, 9900, 9925, 9950, 9975, 10000. The map also shows a network of roads and a river system.


TRAFFIC LANE

TRAFFIC LANE ZONE

INBOUND

A topographic map of the study area, showing contour lines and elevation. The map is oriented with North at the top. The elevation ranges from 100 to 1500 feet. The map shows a river system flowing from the north towards the south. The study area is located in the central part of the map, near the river. The map is labeled with '100', '200', '300', '400', '500', '600', '700', '800', '900', '1000', '1100', '1200', '1300', '1400', and '1500'.

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ABBREVIATIONS: This chart is published in accordance with the following abbreviations:

Light	Light	Light	Light	Light	Light
Light	Light	Light	Light	Light	Light
Light	Light	Light	Light	Light	Light
Light	Light	Light	Light	Light	Light
Light	Light	Light	Light	Light	Light
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UNITED STATES - WEST COAST
WASHINGTON
STRAIT OF JUAN DE FUCA
TO
STRAIT OF GEORGIA
SOUNDINGS IN FATHOMS

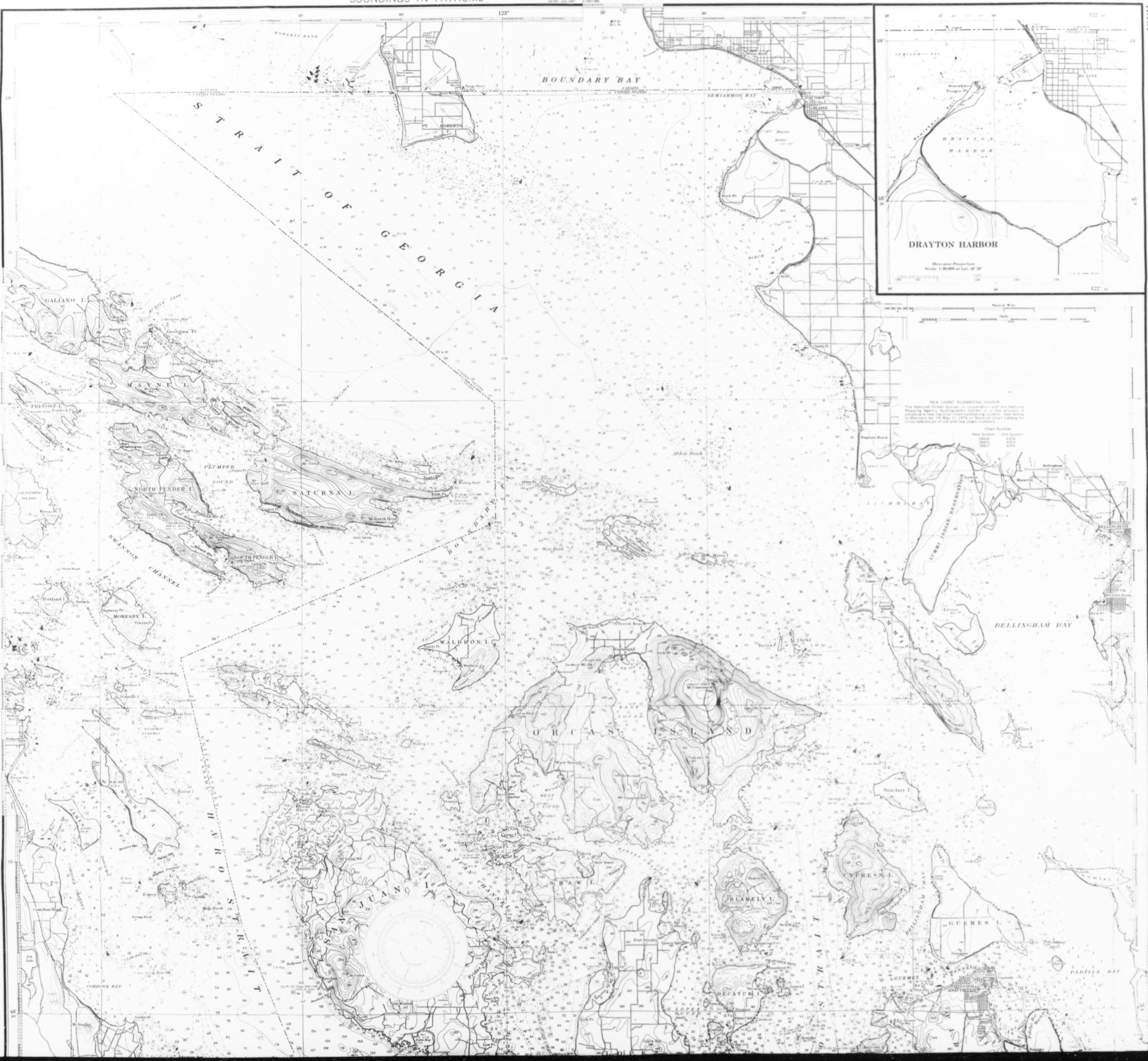
UNITED STATES - WEST COAST
WASHINGTON

STRAIT OF JUAN DE FUCA
TO
STRAIT OF GEORGIA

Scale 1:80,000 at Lat. 48° 30'

Scale	Scale	Scale	Scale	Scale	Scale
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Scale 1:80,000 at Lat. 48° 30'



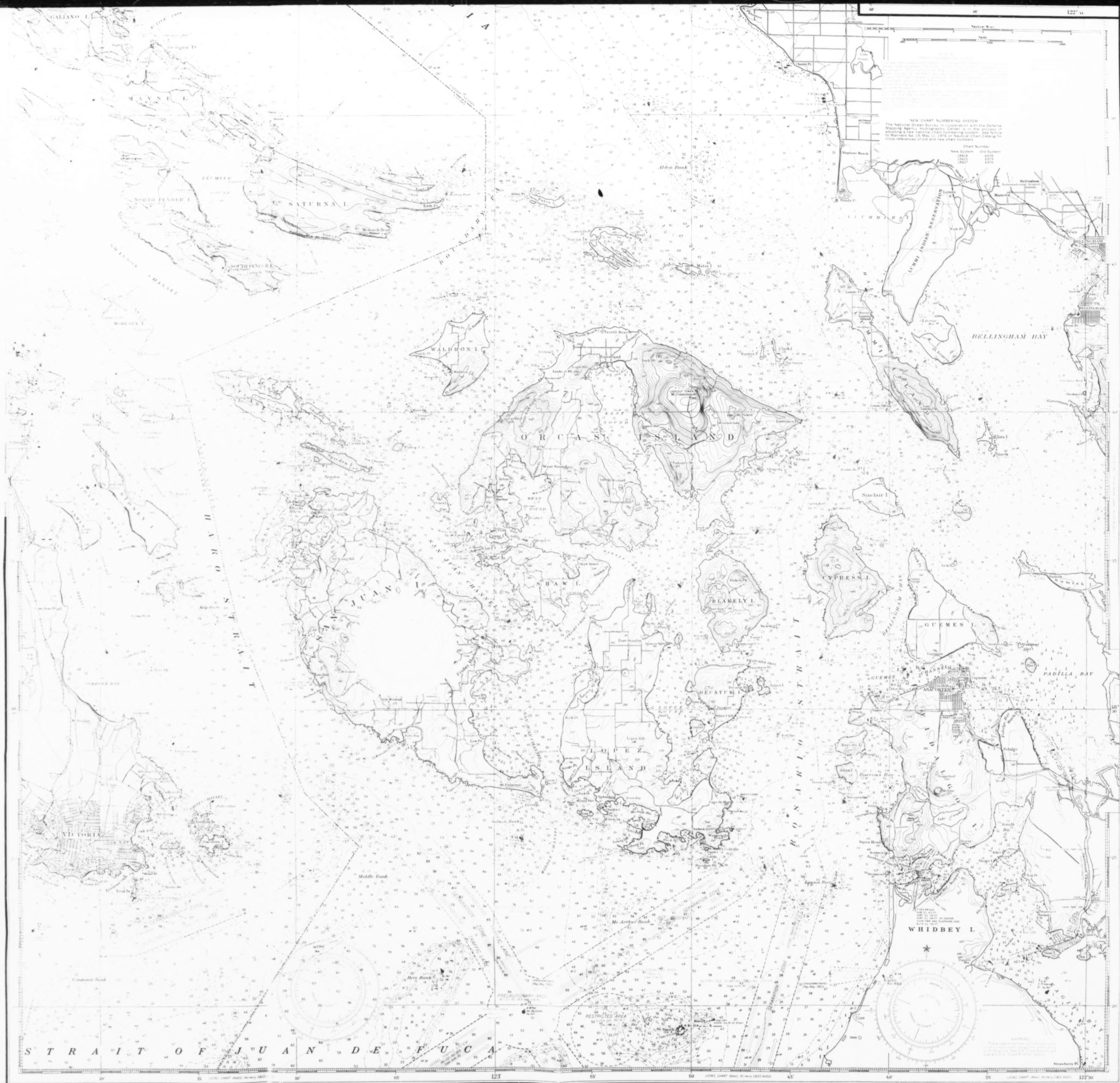
NEW CHART NUMBERING SYSTEM
The National Ocean Service is in the process of adopting a new chart numbering system. The National Ocean Service is in the process of adopting a new chart numbering system. The National Ocean Service is in the process of adopting a new chart numbering system.

Chart Number

Chart Number	Chart Number	Chart Number	Chart Number
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U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY



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NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY

FOOTAGE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
FEET	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
METERS	0.3	0.6	0.9	1.2	1.5	1.8	2.1	2.4	2.7	3.0	3.3	3.6	3.9	4.2	4.5	4.8	5.1	5.4	5.7	6.0	6.3	6.6	6.9	7.2	7.5	7.8	8.1	8.4	8.7	9.0	9.3	9.6	9.9	10.2	10.5	10.8	11.1	11.4	11.7	12.0	12.3	12.6	12.9	13.2	13.5	13.8	14.1	14.4	14.7	15.0	15.3	15.6	15.9	16.2	16.5	16.8	17.1	17.4	17.7	18.0	18.3	18.6	18.9	19.2	19.5	19.8	20.1	20.4	20.7	21.0	21.3	21.6	21.9	22.2	22.5	22.8	23.1	23.4	23.7	24.0	24.3	24.6	24.9	25.2	25.5	25.8	26.1	26.4	26.7	27.0	27.3	27.6	27.9	28.2	28.5	28.8	29.1	29.4	29.7	30.0

(Strait of Juan de Fuca to Strait of Georgia)
SOUNDINGS IN FATHOMS

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(formerly C&GS 6380)